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The role of the state and the market in the Korean Water Sector: Strategic decision making approach for good governance

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**The Role of the State and the Market in the Korean Water Sector:
Strategic Decision Making Approach for Good Governance**

Kyung-Jin Min

A thesis submitted for the degree of Doctor of Philosophy

**University of Bath
School of Management**

January 2011

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Abstract

This thesis challenges the neoclassical and the state-oriented views on economic and industrial development, using a strategic decision making theory framework and by focusing on the changing governance of the Korean water sector as an in-depth case. This research finds that a governance structure controlled by a few elites from the market or the state inevitably fails to meet the public interest. Strategic decision making theory (SDT) in this research incorporates Barzelay's institutional processualism (Barzelay, 2003, Barzelay and Gallego, 2006) and Moe's concept of purposive incentive (1981), in order to explain 'changing' governance and the reasons why some actors voluntarily participate in democratic decision making despite 'collective action problems'. The Korean water sector, the case of this research, illustrates these ideas by showing that governance changes result from intense interaction between interested and purposive actors, critical events, and context. SDT analysis is complemented by an econometric analysis, which shows that the decentralisation of decision making power does not necessarily come with better performance unless proper governance is introduced. Solutions suggested in this thesis are democratic industrial governance and, as an intermediate means, a democratic regulatory agency, which is beyond merely (economic) regulation to remedy 'market failure' and economic bureaucrats pursuing long term career path.

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List of Abbreviations

ATO	Ambito Territoriale Ottimale (Optimal Water District)
CNTDP	Comprehensive National Territorial Development Plan
Common Action	Common Action to Prevent Private Water Property and to Promote Social Public Interests
DEA	Data Envelopment Analysis
EFMC	Environmental Facilities Management Corporation
EPB	Economic Planning Board
FDI	Foreign Direct Investment
FEDP	Five-Year Economic Development Plan
FESDP	Five-Year Economic and Social Development Plan
HCI	Heavy and Chemical Industrialisation
IMF	International Monetary Fund
KEI	Korea Environment Institute
Kwater	Korea Water Resources Corporation
ME	Ministry of Environment
MLTM	Ministry of Land, Transport and Maritime Affairs
MPAS	Ministry of Public Administration and Security
NGO	Non-governmental Organization
NICs	Newly Industrialised Countries
NWRP	National Water Resources Plan
OFWAT	Office of Water Services
SDT	Strategic Decision Making Theory
SFA	Stochastic Frontier Analysis
SME	Small and Medium Enterprises
STP	Sewage Treatment Plant
WIPP	Water Industry Promotion Policy
WTP	Water Treatment Plant

Chapter 1. Introduction

1.1 Context, Motivation and Research Questions

Water is “an integral part of the ecosystem, a natural resource and a social and economic good” (United Nations, 1992). However, water does not yet fully meet even basic human needs. 1.9 million people died from diseases associated with poor water and sanitation in 2001. 1.1 billion people, mostly in underdeveloped countries, lack access to safe drinking water and 2.4 billion live without sanitation (UNESCO, 2003). Water supply and sewerage are major constraints for economic and social development in ‘developing countries’. They are also important in ‘developed countries’ where people want higher quality water supplied and where environmental regulation is becoming stricter. Huge investment is required to fulfil these demands.

The leading response to the increasing demands of enormous investment requirements in the last decades has been privatisation based on neo-liberal economics, crystallised by the ‘Washington Consensus’. The UK became a forerunner of neo-liberal policies by selling ten Regional Water Authorities in 1989. International development agencies such as the World Bank and the International Monetary Fund (IMF) have recommended that developing countries apply market-oriented policies by positing privatisation as a condition for loans (Kjaer, 2004, p.24, Robbins, 2003, p.1077). The rationality of the market-oriented approach is that governments fail to rise to these challenges efficiently. It considers appropriate governance to be ‘less government, more market’ (Stoker, 1998, p.18). Many have observed this phenomenon and designated it as a main cause of ‘the hollowing out state’ (Rhodes, 1998, pp.17-18, Evans, 1997, p.64). However, market competition in the water sector is extremely limited. More use of markets in the water sector may simply replace state control with private control, as for example, the English water sector shows. Even though the UK developed a sophisticated regulatory mechanism, it cannot substitute for competition (Littlechild, 1983, p.7).

In contrast, many countries, in particular Newly Industrialised Countries (NICs) in East Asia including Japan, South Korea and Taiwan (Evans, 1989, p.563), took a different path of water sector development. The developmental state in NICs played a leading

role of economic development¹ (Johnson, 1982, pp.305-324, Wade, 1993, pp.147-148). As a part of the economy and as an infrastructure for economic development, water supply and sewerage systems were directly established by the developmental state. The rationality of the state-oriented perspective is market failure, in which a few dominant private actors fail to allocate their resources to strategically important industries (Wade, 1990, pp.14-15).

This research argues democratic governance matters in the water sector. This is based on the perception that diverse interests are related to water and water use, and the water sector is monopolistic mostly 'due to the physical characteristics of water' and its provision (Sabatier, 1993, pp.20-22). Agenda 21 (United Nations, 1992) also recognises this by emphasising "full public participation including water users, indigenous people and local communities in water management policy-making and decision making"². However, the reality is still far from complete implementation of this ideal even in the most advanced countries (World Bank, 2004, p.29).

To verify this proposition, this research studies the governance structures of both the state-led economy and the neo-liberal (market-oriented) economy, where a few elites control strategic decision making. A few politicians and bureaucrats within the state, as policy subsystem actors, have their own preferences and interests, and try to achieve those. Due to this limitation of the state and asymmetric information the state elites have, the state-led economy is basically subject to failure, where public interest can not be properly served. The modern market is not fully competitive, rather concentrated in a small number of large firms in general. A few elites in large firms, notably transnational corporations, direct not only strategic decision making of these corporations, but also influence the policy making of related states. Inevitably, the market is also vulnerable to failure.

¹ As Johnson (1982, pp.17-23) illustrates the case of Japanese economic development after the Second World War, the Japanese government was not just a regulator remedying market failures such as the abuse of monopoly power of large firms and externalities. Instead, the government, in particular the Japanese Ministry of International Trade and Industry, was a main economic actor setting industrial targets, providing diverse resources to and cooperating with large Japanese firms.

² This idea is fully supported by the perspective of integrated water resources management, the generally accepted way of water management (Agarwal et al., 2000, pp.15-17, Solanes and Gonzalez-Villarreal, 1999, p.7).

Rooted in the fact of the unavoidable failure of the state-oriented strategy and the market-centred approach, this research uses strategic decision making theory (SDT) as the basis of its analysis. It will suggest that democratic governance for the water sector, which embraces market, state and community, is a fundamental driver of industrial development. This research sees governance as networks among diverse related actors and, by adding 'democratic', within networks, it postulates that diverse actors should fully participate in decision making. The state and business are the significant power sources of the real world. When they monopolise decision making power and resources, failure occurs. SDT named this 'strategic failure' (Cowling and Sugden, 1999, p.361). However, social actors such as Non-governmental Organisations (NGOs) and labour unions become important actors through democratisation which may itself be the combined result of economic development (Lipset, 1959, p.75), and 'a wide variety of social conflicts and of political contents' (Rustow, 1970, p.345). This makes democratic governance for the water sector more feasible.

This research challenges the classical economics' postulation of 'self-interest' as the only driver of human action by adopting Moe's concept of purposive incentives (1981, p.536). We will suggest that the evolution of democratic governance is a result of intense interactions among purposive and self-interested actors responding to events and contexts. In many cases, purposive actors participate in democratisation, a collective good, not for material incentives but for purposive incentives such as belief and ideology.

This research selects the Korean water industry as a main case for analysis, though two Asian economies and three water industries are chosen as comparators. This is not only because Korea has a history of rapid, dynamic change of economic status from an impoverished country in the 1960s to an industrialised economy in the 1990s, but also because it has experienced a radical governance change of the water sector. Based on this motivation and from the perspective of SDT, this research attempts to answer the following questions:

- ☐ How has the water industry been 'governed' in South Korea?
- ☐ Why has the Korean water industry come to be governed in this way?
- ☐ What is good governance for the water industry and how could it be achieved?

1.2 Organisation and Chapter Overview

This thesis consists of eleven chapters. After the introduction, Chapter Two starts by introducing SDT and its recent development. SDT pays attention to the decision making structure of a firm, an industry, and national and international economies, where a small number of elites control important decision makings. SDT pinpoints that this partial decision making structure cannot meet diverse interest from the public, but only serves the vested interest of a few. Democratic governance where diverse interest groups fully participate in decision making process is suggested as a way of solving this ‘strategic failure’. However, SDT has not yet considered a collective action problem of democratic participation of social actors in decision making process. It is unlikely for rational actors to participate in the process when costs for the participation outweigh the benefits. This chapter attempts to extend the perspective of SDT by adopting ‘belief’ as another motive of human behaviour depending on Moe’s theory (1981). A key issue in democratic governance is the degree of public participation. In order to gauge this, a participatory map is developed anchored on Pitelis and Sugden (1986), Pretty (1995) and Arnstein (1969). Furthermore, the focus of this research is on the ‘process’ of democratisation of decision making rather than on the ‘structure’ of democratic decision making. To explore this, Barzelay’s institutional processualism (2003, Barzelay and Gallego, 2006) is employed. Chapter Two intends to propose an analytical basis by reviewing and linking the above theories.

Chapter Three reviews the developmental paths of the Japanese and Taiwanese economies, and also the water reforms in England and Wales, Italy and Argentina as brief comparator cases. This aims to address the weakness inherent to a single case study and to raise critical issues relevant to the main case, the Korean water sector. Japan and Taiwan, as representative Asian economies led by the states, took different paths from the proposition of the neo-liberal economics. In addition, although England and Wales, Italy and Argentina propelled market-centred reforms in the water sectors, their ways are significantly different to each other. These comparative studies based on SDT provide a rich source of information for the main case study. Secondary datasets such as academic papers and periodicals are utilised for the analysis given its nature as a preliminary study.

Chapter Four presents the research methods utilised for this thesis. This research chooses the Korean water sector as a case to verify the theoretical proposition in Chapter Two. According to the historical development of the Korean water sector, the case is divided into three sub-cases: the supply-oriented case, the environment-oriented case and the market-oriented case. The reason why this research selects the Korean water sector as the case is that Korea has experienced rapid development of the water sector in which actors from the state, the market and the society closely interacted with each other to achieve their own interests and beliefs. Unstructured interviews with key informants and secondary data, such as newspapers, government documents, research papers and documents published for public hearings and conferences, are used to analyse the sub-cases. In addition, this research evaluates an efficiency of the Korean water sector by a stochastic frontier model. Chapter Four articulates the methods.

The context of the Korean water sector is explored in Chapter Five. There is little argument about the fact that social phenomenon are the interactive outcomes of context and action. Context is more stressed by structural views including institutionalism while action is more focused by behavioural approaches such as behaviouralism (Immergut, 1998, p.6). Based on processual approaches (Pettigrew, 1997, pp.338-339, Barzelay, 2004, p.31), this research tries to balance the influence of context and action on a social outcome, the change of governance in the Korean water sector. This analytical strategy is well preserved in SDT, the main theoretical background of this research (Branston et al., 2006b, pp.86-88). This chapter analyses physical, socioeconomic and environmental context. Physical context determines the basic features of the water industry, as Sabatier (1993, pp.20-21) states, because water is a natural resource which is constrained by nature. Socioeconomic context including population, the pattern of water consumption and the level of economic development also shapes the industry. Water is a basic environmental good. The public is greatly concerned about water quality. Thus, the environmental context has been a significant determinant of the developmental path of the water sector. However, this research does not postulate that context is an only determinant. Context shapes action and is shaped by action. Nonetheless, by investigating the context, this chapter intends to draw feasible choice sets which actors can choose.

Given the constraints of and responding to physical, socioeconomic and environmental context, Chapter Six intends to explain the evolution of the supply-oriented governance, to identify purposive and material actors and their forming networks, and to analyse the degree of public participation. The developmental state was created based on the Rhee Syng-man regime's (1948-1960) economic and political failures. The Rhee Syng-man government implemented import-substitution industrialisation in order to overcome the subordinate economic structure created in Japanese Colonialism. However, the economic policy failed, mostly because of a small market problem. In addition, the regime's attempt to regain power by a fraudulent election provoked a massive student uprising, called 4·19 Revolution, in 1960. A military coup d'état, namely 5·16 Military Revolution, led by General Park, followed. The military junta adopted an export-led industrialisation in the 1960s and a heavy and chemical industrialisation in the 1970s, reflecting on the failure of the import-substitution industrialisation policy. These economic policies were applied to the Korean water sector based on national plans concerning both economic development and water supply. Changing socioeconomic context according to economic development during the 1980s rather strengthened the supply-oriented governance because water supply to rural areas was recognised as a social welfare. For analysing these process and dynamics, this chapter depends heavily on secondary datasets such as newspapers, government documents and academic papers because this sub-case is about events happening more than 20 years ago, so it is difficult to use primary data such as interviews or surveys.

Environmental events were critical junctures in the development of the Korean water sector. The events were a basis of empowering social actors and significantly influenced the policy making structure of the Korean water sector. Chapter Seven explains the dynamics of forming the environment-oriented governance of the Korean water sector. This chapter consists of two very important episodes: the Phenol contamination in the Nakdong River; and the cancellation of the Yeongwol Dam construction project. The former was an accident whereas the latter was a result of an environmental movement. Phenol contamination in the Nakdong River impacted potable water provided to two metropolitan districts and several cities in 1991. This accident made the environmental movement a national movement beyond the movement of environmentalists and social activists. Founded on the accumulated power of the environmental movement, environmentalists set a plan to cancel a large dam construction project and succeeded in

withdrawing the construction project. In order to analyse the process, the incentives and networks of related actors, and the level of public participation, Chapter Seven uses both unstructured interviews and secondary datasets. By triangulating both methods, this chapter can increase the reliability of findings.

Market-oriented prescriptions started prevailing since a financial crisis in 1997, the so-called “IMF Crisis”. The economic event significantly reshaped the Korean economy and the water industry. Chapter Eight aims to investigate the process and reasons of forming the market-oriented governance in the Korean water sector. As conditions of the bailout, the IMF requested an economic reformation programme based on neo-liberal economics. This programme did not directly demand the privatisation of utility industries such as electricity and gas, but favoured private supply of utilities. The Ministry of Environment (ME) eagerly introduced a privatisation policy of the wastewater sector. This made the privatisation of the Korean water industry a controversial issue. Interaction between related actors including other ministries, NGOs and labour unions has grown to be intensive. The interaction can be classified into three phases: the privatisation of the wastewater sector, the liberalisation of the water supply sector, and the introduction of the Water Industry Promotion Policy (WIPP). This chapter explores the developmental phases, the incentives and network of relevant actors, and the degree of their participation in decision making, depending heavily on unstructured interviews.

Chapter Nine analyses the efficiency of the Korean water supply sector. By analysing the evolution of the Korean water sector governance in previous chapters, this research finds the development of decision making from a structure dominated by a few elites of the government in the supply-oriented governance, through a more democratic structure in the environment-oriented governance, to a relatively concentrated governance in the market-oriented governance. Despite the changing governance in the Korean water sector, the efficiency of the Korean water sector seems to have decreased. Based on neo-liberalism, many (Park and Choi, 1999, pp.146-178, Moon et al., 2001, pp.68-74/100-114, ME, 2006c, pp.52-54) have suggested the privatisation and integration of the water industry as ways of increasing efficiency. This chapter intends to disprove this argument, at least partially, by using an econometric methodology. In addition, in order to suggest good governance for the Korean water sector, which is defined as democratic

governance with competitiveness, this chapter will analyse the source of efficiency and draw important issues for the governance. Even though SDT sees competitiveness as the capability to effectively achieve democratically chosen objectives, the reason why efficiency matters is that efficiency would form part of democratically chosen objectives and part of effectively achieving any desired objectives. A stochastic frontier model developed by Battese and Coelli (1995) is used to analyse the efficiency. This complementary analytical strategy may provide a deeper understanding about the development of the Korean water sector.

Anchored on the processual analysis on the governance development of the Korean water sector and the efficiency analysis of the Korean water supply sector, Chapter Ten proposes good governance for the Korean water industry. This considers national, regional and local levels of governance and models a type of democratic regulatory governance for the sector. Chapter Ten also reviews the relation between governance, regulation and competition from the perspective of SDT on the way to suggesting good governance. In order to utilise a comparative perspective, relevant cases are investigated. This suggests policy prescriptions to remedy some drawbacks of the future development path and to pave the way to competitive and democratic governance of the Korean water sector.

Finally, concluding comments are presented in Chapter Eleven. This chapter summarises this thesis and highlights key findings, based on which this research reaches some conclusion on the main ideas of a way of governing the industry. Chapter Eleven includes the contributions of this research and suggestions for future research.

Chapter 2. Literature Review and Analytical Framework

2.1 Introduction

This research aims to explain the reasons why the governance of the Korean water industry has evolved in a certain way and how the industry has been governed. Conventionally, industrial and more broadly economic development has been explained by dichotomies: the state and the market (White and Wade, 1988, p.2, Johnson, 1982, p.18, World Bank, 1991, p.131). Nonetheless, this research argues that the dichotomies are not enough to account for economic and industrial development. It rather suggests that democratic governance is a better way to facilitate and continue the development. This is based on the perception that the government cannot be the only policy maker in the diverse, complex and dynamic world, while the market is vulnerable to failure due to its imperfection. In particular, the water industry is closely related to environmental issues. This demands more democratic governance in the water sector (Dresner, 2002, p.2, Baker, 2006, pp.41-46, Lele, 1991, pp.615-616, World Commission on Environment and Development, 1987, p.8). This research attempts to prove this argument mainly depending on SDT.

2.2 Strategic Decision Making Theory

SDT focuses on dominant actors who have decision making power, and seeks the ways in which various actors having interests democratically participate in the course of decision making. These characteristics of SDT are likely to provide an appropriate analytical and theoretical basis for the study.

2.2.1 Origin and Concept

SDT originates from a theory of the firm which critically reflects on typical interpretations of Coase's theory. In the view of transaction cost theory and principal-agent theory, the firm is a nexus of contracts (Demsetz, 1988, p.154, Jensen and Meckling, 1976, p.310). Jensen and Meckling (1976, p.311) state that "the private corporation or firm is simply one form of legal fiction which serves as nexus for

contracting relationship.” These suggestions are founded on Coase’s idea (1937, p.390) that “the main reason why it is profitable to establish a firm would seem to be that there is a cost of using the price mechanism.”

However, SDT defines a firm as a nexus of strategic decision-making (Cowling and Sugden, 1998, p.61). The approach starts its argument from Coase’s perception (1937, pp.387-8) that entrepreneurs carry out a co-ordinating function to direct production within a firm, while the price mechanism does so outside the firm. Coase (1937, p.387) illustrates that a workman within a firm is transferred from department to department not because of a change in relative prices, but because of an order for him to do so. He (1937, pp.387-8) continues that there exists economic planning within a firm which is determined by entrepreneurs, rather than by the price mechanism. That is, within a firm, which are ‘islands of conscious power’ (Robertson, cited in Coase, 1937, p.388), entrepreneurs exercise their power to co-ordinate factors of production through economic planning.

Zeitlin (1974), however, provokes a debate about management control over a firm. Zeitlin (1974, p.1091) conceptualises control as follows: “when the concrete structure of ownership and of intercorporate relationships makes it probable that an identifiable group of proprietary interests will be able to realise their corporate objectives over time, despite resistance, then we can say that they have ‘control’ of the corporation.” In line with Zeitlin (1974), Pitelis and Sugden (1986, p.72) recognise control as ‘the ability to determine broad corporate objectives’, and strategic decisions as decisions over strategic issues such as a firm’s relationship with rivals, states and workers, its sources of raw materials, and its geographical orientation. They (1986, pp.72-3) stratify decision making into three layers, which are composed of strategic, operational and working decisions. The operational decisions that comprise day-to-day decisions over tactical issues are taken by managers given the constraint imposed by strategic decisions. Promotional activities and the choice of a particular project from a subset of alternatives are illustrated as the operational decisions. The working decisions are taken by workers given the constraints of both strategic and operational decisions. They include decisions over work intensity, bearing in mind the severe discipline imposed by assembly lines. From this perspective, a firm is seen to have a hierarchical system of decision-making. Pitelis and Sugden (1986, p.73) maintain that strategic decisions are particularly

important because they determine the direction of a firm. Table 1 briefly shows the hierarchy of decision making.

Table 1 Three layers of decisions

Definitions		Examples
Strategic decisions	- Decisions determining broad corporate objectives	- Decisions over a firm's relationship with rivals, states and workers, and its geographical operation
Operational decisions	- Decisions taken by managers given the constraints imposed by strategic decisions	- Day to day decisions over tactical issues such as promotional activities and the choice of a particular project
Working decisions	- Decisions taken by workers given the constraints of strategic and operational decisions	- Decisions on work intensity, bearing in mind the severe discipline imposed by assembly lines

Source: Pitelis and Sugden (1986, pp.72-73)

The theory pays attention to the decision making structure of large corporations, especially transnational corporations, which is under the control of a few elites (Cowling and Sugden, 1998, Cowling and Sugden, 1999, Sugden and Wilson, 2002), though 'who are included in the elites is a topic of considerable debate (Branston et al., 2006c, p.312)'. Pitelis and Sugden (1986, pp.69/81) suggest that firms are controlled by a dominant subset of individuals who are owners, whereas managerialists argue that they are in the hands of either owners or managers. Despite the debate, it is generally recognised that firms are under the control of a few elites and the vast majority is excluded (Branston et al., 2006c, p.312). 'A strategic decision making process dominated by specific actors implies an unbalanced power distribution among the actors involved' (Sugden et al., 2006, p.68). This governance structure of the firms, in which a few elites dominate strategic decision making, does not leave place for reflecting diverse interests in the process of strategic decision making, that is 'strategic failure' (Cowling and Sugden, 1999, p.361).

Conversely, 'strategic success' can be defined as a state in which every member of a firm and diverse interest groups within and outside the firm can fully and democratically participate in strategic decision making. SDT has implicitly recognised the state of strategic success (Cowling and Sugden, 1998, pp.82-83, Cowling and

Sugden, 1999, pp.371-373). Branston et al. (2006a, p.190) name the state 'good governance'. To overcome the failure and to achieve the success, SDT seeks diverse ways by which various interest groups and communities could be fully reflected. The next part explores the ways that the theory has developed for the democratisation of decision making.

2.2.2 Economic Democracy, Development and Competitiveness

SDT's concept of economic democracy develops based on Dewey's theory (Sugden and Wilson, 2003, p.17, Bailey et al., 2006, p.561). Dewey (1927, pp.90-92) questions utilitarian economic theory³, which postulates that transactions between rational, self-interested persons with perfect information result in the maximum possible social and individual prosperity under the invisible hand of the market. Beyond conventional criticism against artificial conditions of utilitarian economics concerning 'the omni-competent individual' (p.158, cited from Lippman), he (pp.90-92/102-105/154) points out that the thought, belief and behaviour of individuals are not naturally endowed, but developed by learning from others. That is, they are "a subject matter provided by association" (p.25), and continuously modified by reference to shared interest (pp.154-155).

The role of the state for the liberalists is to protect property and contract and to prevent anyone from encroaching others' activity (p.92). They believe that encroachment is not only unjust but also weakens social progress by discouraging people's devotion to economic activity (p.92). Nonetheless, under the doctrine of liberalism, power has been transferred only from political elites to economic elites (p.161). Free transactions without proper encroachment creates just the situation under which the stronger, representatively big business, are able to exploit others for their pecuniary ends and to constrain the weaker in a predicament where the latter cannot realise their own interests (pp.118/155). That is, big business having strong pecuniary interests tries to make every

³ Classical economics, the basis of utilitarian economic theory, was born against governments' excessive intervention in trade and industries during the period of mercantilism. The theory postulates that perfect competition free from governments' intervention is the mechanism of balancing the interests between an individual and the public (Seo, 2005, p.137). In particular, smuggling in the 18 century threatened government revenue and decreased legal corporate profits. This made government reconsider protective trade policies and supported classical economics' argument on free trade (Cameron and Neal, 1993, p.275).

effort to secure them against others, and in turn directly and indirectly affects others' interests (p.182).

When the consequences of transactions extend beyond those⁴ who are directly involved in them and affect the welfare of others, the public interest is provoked (p.13). In contrast with liberalism, Dewey's idea of the state is to care for and regulate these consequences (p.39). Beyond merely "popular election of officials, short terms of office and frequent elections" for political democracy based on individualistic ideas of the liberalism, Dewey (pp.93/211-214) argues that democracy must be founded on local communities whose traits are "face to face intercourse" and "free and full intercommunication." These communities are the basis of 'democratic governance' of SDT where the public interest can be properly served and related actors can fully democratically participate in strategic decision making (Cowling, 1985, p.247, Cowling and Sugden, 1993, pp.49-51, Branston et al., 2006a, p.190, Branston et al., 2006d, p.51, Bailey et al., 2006, p.564). In line with this argument, this research conceives governance as 'self-organising networks' (Rhodes, 1996, p.660) or 'heterarchy' as Jessop's (1998, p.29) term. Governance as a 'self-organising network' or 'heterarchy', points out the limits of market-centred anarchy and state-centred hierarchy, and perceives the significance of society (Rhodes, 1996, p.660, Jessop, 1998, p.32). Rooted in trust and regulated by agreed rules, actors from the state, the market and society continuously interact with full autonomy for policy outcomes (Rhodes, 1996, p.660, Jessop, 1998, pp.29-30).

SDT identifies development in terms of the aims and objectives of localities⁵ which are rooted in their own history and culture (Sugden and Wilson, 2002, p.117, Branston et al., 2005, p.48). This approach stands opposed to traditional evaluation of economic development which has relied on typical indicators such as a GNP per capita (Sugden and Wilson, 2002, pp.114-117). The criticism is based on the fact that the traditional development criteria tend to be uniformly applied for making judgments on what must

⁴ Dewey (1927) sees that "the public consists of all those who are affected by indirect consequences of transactions (pp.15-16)" while the private is persons who directly engage in them (p.12).

⁵ Sugden and Wilson (2002, p.118) define "a locality as a (typically subnational) geographical area characterised by certain common institutions, practices and identity, and by the relationships that these foster between actors." They maintain that this definition has flexibility allowing consideration of different layers of locality, and to accommodate the different communities that exist within and across these layers.

be done to develop and disregard the aims and purposes of local communities (Sugden and Wilson, 2002, p.117).

This approach takes notice of the concentration of decision making power which is in the hands of a small number of developed countries in the process of traditional economic development in a similar way that in modern large firms, strategic decisions originate from a few elites (Sugden and Wilson, 2002, p.123). Thus, this theoretical view seeks democratic participation in strategic decision making as a part of the process of development (Sugden and Wilson, 2002, p.127). Even though economic growth calculated by income prevailed and is still dominant, threats from environmental pollution and social and economical inequity demand radical change of the typical economic development for sustainability. In this context, democratic participation of diverse actors and coordination between international, national and local values are essential.

SDT also raises a question about the conventional concept of competitiveness which usually refers to “a nation’s ability to produce and successfully sell goods and services in a free international market, and to simultaneously increase the real income of its people over the long run (Branston et al., 2006c, p.308).” Understanding competitiveness only for ‘acquisition of material goods’ is short-sighted, but needs to be extended to direct experience with ‘intellectual and artistic wealth’ (Dewey, 1927, p.217). Pitelis et al.(1996, p.160) propose that “the international competitiveness of a country is better defined as the degree to which the country can improve upon a (subjectively chosen) index of national welfare in a sustainable way, relative to other countries/nations.” SDT critically adopts Pitelis et al.’s notion of competitiveness due to its narrow focus on a subjective index, even though the notion incorporates a measure of relative performance in competitiveness and extends the scope of competitiveness (Branston et al., 2006c, pp.308-309). SDT tends to see competitiveness ‘in terms of the democratically determined objectives for development in a specific locality’ (Branston et al., 2006c, p.309). Branston et al (2006c, p.308) state that “to be competitive is to satisfy those objectives effectively as compared to other localities.”

The newly developed concepts derived from SDT theory might provide good analytical bases for this research in that its analytical focus is on power relations and interaction

between social actors in the process of economic development and suggesting good governance for the democratic participation of social actors and localities.

2.3 Issues of Democratic Participation

Drawing upon SDT, this research considers the reasons why social actors want to participate in a strategic decision making process and the ways in which they can achieve this participation. Branston et al. (2005, p.50) postulates that actors pursue their own interests according to the assumption of standard economic theory. That is, those who have interests in strategic decision making have an intention to participate in decision making in order to realise their interests. An important matter is whether everyone will voluntarily and actively participate if the democratic participation is open to everyone. From a perspective of collective action, some argue that expanding opportunities for public participation might simply provide additional chances for special interest groups to capture the participation efforts at the expense of wider community (Rydin and Pennington, 2000, p.158). Democratic participation of interest groups in the strategic decision making process is an aim of SDT. Therefore, in the course of enlarging the democratic participation, the theory might encounter similar problems as stated above. This section attempts to find a way to address the problems by reviewing collective action theory and considering purposive incentives as another driver of human behaviour.

Concerning the question how they can access the decision making process, SDT suggests 'voice' as a mechanism for democratic decision making in firms, governments, and other non-governmental organisations (Branston and Wilson, 2006, p.5). Nonetheless, the extent to which people can raise their voice in decision making is another important matter. Participation becomes a most popular word in policy making, but it has been used with quite different meanings. One of two main views sees participation as "a means to increase efficiency" while the other perceives it as "a fundamental right" (Pretty, 1995, p.1251). As Pretty (1995, p.1252) and Hart (1992a, p.8) suggest, there exist diverse modes of participation. In this section, the typology of participation is incorporated as a part of the analytical framework.

2.3.1 The Issue of Collective Action Problems

2.3.1.1 Collective Action Problems

Mancur Olson, through *The Logic of Collective Action* (1965), denies the conventional assumption regarding collective action, namely that common interests shared by a group of people are congruent with their personal interests and people attempt to further the common interests. He (1965, pp.2/15) rather argues that “rational, self-interested individuals will not act to achieve their common or group interests” because they cannot be excluded from the consumption of public or collective goods⁶ though they do not pay for them. That is the first order problem of collective action caused by free riders (Oliver, 1993, p.281, Ostrom, 1991, p.6)⁷.

Ostrom (1991, pp.2-3) more profoundly explains the free rider problems by illustrating Hardin’s ‘The Tragedy of Commons’ and the prisoner’s dilemma game. In Hardin’s instance of the tragedy of freedom in the commons (1968, p.1244), ‘each herder will try to keep as many cattle as possible’ on a pasture, the commons. This is because they receive almost the whole utility from any added cattle, but share only a fraction of the negative utility caused by any additional overgrazing. He concludes that “each man is locked into a system that compels him to increase his herd without limit- in a world that is limited”. As Ostrom (1991, pp.3-5) exemplifies, a prisoner’s dilemma game in which each player has complete information about the game structure and payoffs results in a non-optimum (defect, defect) which produces a Pareto inferior outcome to that of Pareto optimum (cooperate, cooperate) because the player is always better off choosing defection whether the other player decides to defect or cooperate.

2.3.1.2 Policy prescription for the free rider problems

The free rider problem has brought about two dominant policy prescriptions: control by the central government and privatisation of the commons (Ostrom, 1991, pp.8-13).

⁶ Olson (1965, p.15) explains that to achieve any common goal or to satisfy any common interest of a group means to provide a public or collective good for that group.

⁷ The second order problem of collective action originates from actors’ reluctance to sanction free-riders and to create new rules due to non-exclusion from their benefits (Ostrom, 1991, p.42; Oliver, 1993, p.281).

According to Ostrom's critical point of view, centralised control by an external government agency could result in fewer payoffs than those of the prisoners' dilemma game because the agency has incomplete information which leads to errors in imposing punishments. To illustrate, the central authority decides to impose a penalty on anyone who overgrazes. If the authority has complete information, it can exactly design a penalty which makes overgrazing inferior to a cooperation strategy. If not, the authority could punish cooperation or not punish overgrazing. Thus whether the authority could prevent overgrazing depends on the accuracy of the information which it has. Furthermore, she doubts the privatisation of the common goods since it also leads to overgrazing if pasture in Hardin's illustration has erratic rainfall. In other words, if variable precipitation makes some part of a meadow severely inadequate to a herd of cattle from year to year, dividing and privatising commons might impoverish each herder and lead to overgrazing.

Ostrom (1991, pp.13-18) converts her attention from outside solutions, namely the centralised regulation and private property ownership of the common goods, to inside solutions, in which the herders can rescue themselves from the dilemma situation. By proposing a binding contract model based on a noncooperative game framework, she argues that negotiation between herders remedies the incomplete information of herders because one player's suggestion founded on incomplete information will be vetoed by other herders. However, the binding contract requires the cost of enforcing an agreement. Thus, she points out that when the enforcing cost is less than the difference between the highest payoffs and the lowest payoffs in the prisoners' dilemma game, the contract is feasible because the worst payoffs is the same as the worst outcome of the prisoners' dilemma game.

Among her several empirical illustrations about the binding contract model, the inshore fishery at Alanya in Turkey (Ostrom, 1991, pp.19-20) shows that members of local producers' cooperatives formulated rules about the inshore fishery to avoid conflicts and competition among fishermen for the better fishing spots. In this fishery system, an eligible fisherman is assigned to a fishing location chosen by drawing lots and moves to the next location each day. The process of monitoring and enforcing the system is accomplished by the fishermen. However, as Ostrom (1991, p.26) recognises, her self-governing proposition is constrained within situations where substantial scarcity of

renewable resources exists and situations where the users can substantially harm one another and focuses entirely on small scale common pool resources⁸. Furthermore, her illustrations of herders and fishery based on her model of binding contract concern producers of certain goods. If interest groups could not be producers or providers of particular goods and services due to whatever reasons such as size of community or scale of production, there might be different solutions to overcome free-riders problems.

2.3.1.3 Interests and Beliefs

The collective action perspective explains human behaviour based on interests. However, collective action problems reveal the limitation of democratic participation of interested actors in that the democratic participation itself is a common good. Nevertheless, the democratisation of society and economy has long been progressed. To overcome this dilemma, this research considers beliefs, another driver of human behaviour with interest.

Strategic decision making approach has developed its theoretical position from the hierarchical structure of decision making, in which strategic decisions are the pinnacle. It devotes considerable attention to 'strategic failure' which results from selective reflection of 'special interests' of a few dominant elites in strategic decisions. A market failure approach is perceived restrictive from the perspective of SDT because it narrowly focuses on analysis of competition and regulation within a sector, but does not consider the economy as a whole (Branston and Wilson, 2006, pp.8-9). This perception is based on the fact that imperfect competition in the market and/or for the market like monopolistic or duopolistic competition leads to 'market failure', in which consumer choice is considerably restricted and locked into a few monopolies. Market failure is most likely to induce government intervention as a form of regulation which, however, results in 'government failure' due to 'imperfect information' and/or self-interested bureaucrats. Consequently, strategic decisions in the context of 'market failure' and 'government failure' are most likely in the hands of a few dominant interests. Those are 'strategic failure'.

⁸ Ostrom (1990, p.30) defines common-pool resource as a natural or man-made resource system that is sufficiently large as to make it costly (but not impossible) to exclude potential beneficiaries from obtaining the resource from its use.

However, SDT does not stick to problems provoked by a lack of competition which can be characterised as ‘no real choice’ of exit (Hirschman, 1970, p.28). But rather, it actively incorporates Hirschman’s concept of voice (1970, p.33) as a means by which dissatisfied customers or members can react whenever either no real choice of exit exists, or voice is more effective and/or less expensive than exit. Voice mirrors democracy which is inherently not mechanistic (Branston et al., 2006d, p.54), but direct and straightforward (Hirschman, 1970, pp.15-16), whereas exit is a market mechanism, which is impersonal and indirect (Hirschman, 1970, pp.15-16). That is, to develop ‘voice’ is synonymous with the history of democratic control through the articulation and aggregation of opinions and interests (Hirschman, 1970, p.55). In line with this, SDT has emphasised democratisation of decision making (Sugden and Wilson, 2002, p.127, Branston et al., 2006a, p.190).

Democracy and democratic participation as a collective good is apt to provoke collective action problems. Accordingly, Branston et al. (2006a, p.201) realistically assumes that not every interest party would immediately want to become a member of an organisation. SDT adopts Hirschman’s notion (1970, p.32) that ‘a mixture of alert and inert citizens, or even an alternation of involvement and withdrawal, may actually serve democracy better than either total, permanent activism or total apathy’. Nonetheless, it pursues the ideal of ‘economies where people in many countries work together’ (Cowling and Sugden, 1999, p.371), and seeks ‘development in which each person continues to feel an integral part’ (Sugden and Wilson, 2002, pp.127-128).

This view is considerably influenced by Dewey’s idea of community-based democracy. Dewey criticises indirect, individualistic democracy⁹. In his view (pp.148/211/213), democracy is community itself. The notion that a free man naturally seeks his manifest economic interest with perfect information is unrealistic. As Dewey (pp.25/102-105) points out, “the desires, aims and standards of satisfaction” are outcomes of learning from others in association, “not an original possession of persons.” As a result, individuals have differential wants and purposes, which include not only pecuniary ends,

⁹ Individualism was created to legitimise protesting individuals against established authorities, representatively dynastic, oppressive governments by endowing them “inalienable sacred authority,” namely natural right (Dewey, 1927, p.86).

but also philanthropic and artistic goals (pp14/106/216). SDT, deeply rooted in histories, traditions, and culture of localities (Cowling and Sugden, 1999, p.371, Sugden and Wilson, 2002, p.117), has suggested diverse mechanisms based on values and norms which include democratic industrial governance (Branston et al., 2005, Branston and Wilson, 2006) and corporate governance (Branston et al., 2006a), knowledge and learning (Sugden and Wilson, 2005, pp.22-24, Branston et al., 2006c, p.315), changing attitudes (Branston et al., 2005, p.54), and forums (Branston et al., 2006d, p.61).

This research attempts to strengthen SDT's perspective on normative aspects of the fundamental driving forces of the democratisation of decision making by adopting Moe's concept of purposive incentives (1981, p.536). He argues that purposive incentives deriving from ideological, moral, or religious principles can shape an individual's evaluation of collective goods. To illustrate, the evaluation of benefits the individual attaches to the political goals of a consumer group may reflect his broader concern for other citizens, economic justice, or political equality, and may far outweigh any economic gains he expects for himself (Moe, 1981, p.536). Moe's rationality of collective action (1981, p.536) include not only efficacy: the costs and benefits of political success, but also purposive incentives: ideological, moral, or religious principles. In line with this, Schlager (1995, p.255) suggests that "in some cases, preferences may be the overriding factor, in other cases individuals attempt to do right thing." The assumption that only personal interests motivate individuals to act has some limitations in explaining cooperative behaviour in social dilemma settings like collective action problems (Schlager, 1995, p.254). According to his argument (1995, p.262), shared beliefs fill the gap. That is, norms and values would be fundamental incentives for collective action.

Jenkins-Smith, a co-developer of the Advocacy Coalition Framework¹⁰, extended Moe's theory by identifying 'material groups' and 'purposive groups'. While material groups pursue the narrow interests of their members' profits, purposive groups which attract members on the basis of ideological and policy orientations intend to benefit the wider public or society (Jenkins-Smith et al., 1991, pp.852-853, Sabatier and Jenkins-

¹⁰ Sabatier (1993, pp.27-28), a co-developer of Advocacy Coalition Framework, proposes that beliefs, rather than interests, are the principle glue of advocacy coalitions, and rejects the view that actors are primarily motivated by their short term self interest, based on the argument that beliefs are more inclusive and more verifiable than interests.

Smith, 1993, p.224). Accordingly, he suggests that agents for purposive groups take positions and express beliefs in a manner consistent with a hierarchical belief system, whereas the behaviour of agents for material groups may be better represented by the bottom-line material interests (Jenkins-Smith et al., 1991, p.853, Sabatier and Jenkins-Smith, 1993, p.225, Jenkins-Smith and Clair, 1993, pp.158/171). From the case study of oil and gas exploration and development on the U.S. outer continental shelf, Jenkins-Smith and Glair (1993, p.150) identify the purposive group as mainly consisting of environmental groups and the material group as primarily made up of oil and service companies.

To sum up, the focus of SDT is on strategic failure and democratisation. Strategic failure results from the special interests of a few elites who have dominant power in strategic decision making, while democratisation of decision making could be facilitated by the norms and values of individuals who are willing to participate in the decision making process, despite the calculation of material benefits and costs. Based on this assumption, this research seeks to identify two types of actors: material actors and purposive actors, and to investigate the way in which they interact.

2.3.2 Level of Participation

Participation has become a most popular word in political, economic and social life. Participation is the cornerstone of democracy (Arnstein, 1969, p.216). Beyond the limitations of state controls and markets, ‘bottom-up systems’ based on participation have often been stressed in economic development (Brett, 2003b, p.2). Consumers’ participation comes to be popular to counterbalance the power of business in regulatory process (Muzzini, 2005, p.7). Nonetheless, the word, participation, has very different meanings according to theoretical and practical perspectives. Some see participation as a tool for efficient achievement of a particular goal whereas others perceive it as a human right (Pretty, 1995, p.1251). A manifest example of efficiency-oriented participation is the blueprint approach which is assumed to be appropriate for “all people, all places and all times” (Pimbert and Pretty, 1995, p.22). In the blueprint approach, professionals from external institutions with a top-down manner play key roles, but local people are just seen as beneficiaries. The blueprint approach to conservation is accelerated by big business in the forms of ecotourism, natural product

development and medicines (Pimbert and Pretty, 1995, p.21). In contrast, Arnstein (1969, p.216) sees participation as the redistribution of power to those who are excluded from the political and economic processes. Without this redistribution, in his opinion (p.216), participation is an “empty ritual” which only legitimises power-holders’ claim that all interests are considered. Similarly, Hart (1992b) perceives participation as “the process of sharing decisions” and Ogun and Smith (1990, p.12) consider it “the process of empowerment.” Blair (2000, pp.22-24) suggests that participation is “to give citizens a meaningful role in local government decisions that affect them.” In line with these suggestions, this research sees participation as the process of power transition from the powerful to the powerless.

A classical typology of participation was suggested by Arnstein (1969). Based on levels of empowerment, he (p.217) identifies eight types of participation and names it “a ladder of citizen participation¹¹.” The ladder consists of manipulation, therapy, informing, consultation, placation, partnership, delegated power and citizen control¹². Influenced by Arnstein (1969), Hart (1992b, p.8) sorts children’s participation in developmental projects into eight rungs from “manipulation” to “child-initiated, shared decisions with adults” while Muzzini (2005, p.2) categorises consumer participation in regulatory processes into four levels which are “inform, consult, partner and empower”. Based on a similar idea, Manor (1997, p.101, 2003, p.2) emphasises community participation among his diverse types of participation which are voting in elections, taking part in election campaigns, and actions between elections. Pretty (1995, p.1252) suggests seven types of participation in developmental programmes from “manipulative participation” to “self-mobilisation”. In his typology, “manipulative participation” is just the pretence of people’s participation on official boards. In “passive participation,” people are only told, while through consultation, they answer professionals’ questions. When “participation for material incentives” takes place, people intend to exchange their resources like labour with material incentives such as food and cash. This type of

¹¹ Arnstein (1969, p.217) regroups manipulation and therapy into nonparticipation, informing, consultation and placation into degrees of tokenism, and partnership, delegated power and citizen control into degrees of citizen power.

¹² In Arnstein’s ladder (1969, p.217), the bottom rungs are “manipulation” and “therapy” where participants are just objects of education or treatment. The middle rungs consist of informing, consultation and placation where participants are heard or advise, but have no power to reflect their interest. In the top rungs, partnership allows participants to engage in decision making with power-holders, whereas, at the levels of delegated power and citizen control, participants have considerable power in decision making and implementation.

participation has no continuing effects. Through “Functional participation,” people are involved in shared decision making, only after major decisions are externally made. “Interactive participation” allows people to have controlling power over local decisions and to decide how resources are allocated. ‘Self-mobilised’ people have initiative to change system independently from external institutions, and only contact external agencies for resources and technical advice.

Pretty’s typology of participation provides more identifiable contents for each rung and more clearly classifies the upper rungs of the ladder of participation than those of others. Therefore, the analytical framework of this research adopts his typology. However, for analytical simplicity, Pretty’s typology is regrouped into nonparticipation, tokenism and empowerment according to Arnstein’s ideas (1969, p.217). Nonparticipation includes manipulative participation and passive participation. Tokenism embraces participation by consultation, participation for material incentives and functional incentives. Empowerment contains interactive participation and self-mobilisation.

As SDT suggests, the structure of decisions has a hierarchy which is working, operational, and strategic decisions. According to the level of decisions, participation may have different effects. That is, even though consultation with participants is carried out, consulting citizens for strategic decisions may have more significant effects than that for operational decisions. Cowling and Tomlinson’ analysis on the J-mode model of Japanese firms (2000, p.366) clearly shows power delegation to employees at the level of operational decision-making. Even though employees in Japanese firms are allowed to engage in the organisation and co-ordination of production, their roles are confined to decisions about day to day operation of the firms. Korea’s New Village Movement is another example of power delegation in economic development. Every villager is a member of the General Meeting of Villagers which was the pinnacle of local level decision making (So, 2007, pp.107-108/110). Youth Club for the New Village and Women’s Club for the New Village played important roles for the movement. As co-producers, villagers decided where to invest first and how to raise funds¹³ (So, 2007, pp.105/110). Nonetheless, the Central Association for the New Village Movement which was composed of vice ministers from the central governments set the direction

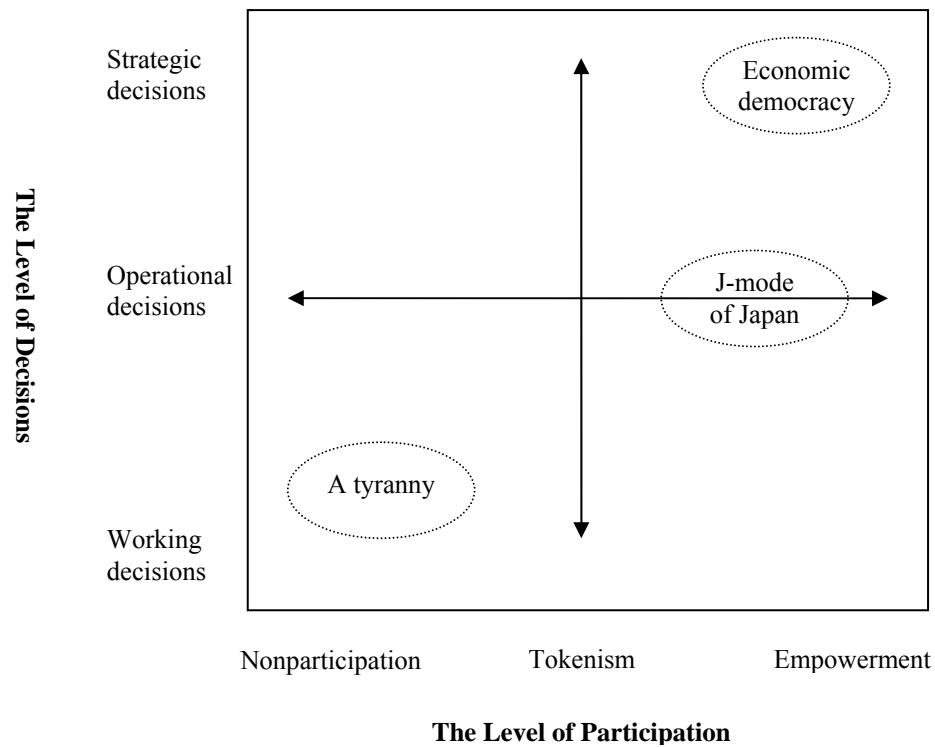
¹³ In general, more than 70 percent of the funds were collected from villagers and the rest were subsidised by the government (So, 2007, p.105)

and targets of the movement through both short and long term plans (So, 2007, pp.106-107, Kim, 2004, p.185). In addition, the association had its subordinate organisations in the regional and local levels. Thus, villagers had only limited decision making power within the operational level.

Synthesising a typology of participation and the three layers of decisions, this research develops a participatory map as shown in Figure 1. The participatory map can be largely classified into nine segments from nonparticipation in working decisions to full empowerment of strategic decisions. However, this research considers that the typology of participation and the layers of decisions are on continuum from an efficiency-oriented perspective to a right-centred perspective, and from working decisions to strategic decisions respectively. This is because, though participation has been divided into a few categories, there might be many more segments in participation (Arnstein, 1969, p.217, Brett, 2003a, p.5). Similarly, there might be blurred areas between SDT's three layers of decisions. In the participatory map, the J-mode of Japanese firm and the New Village Movement may belong to the empowerment of operating decisions. Economic democracy seems to fit into full empowerment of strategic decisions. The ruler in a tyranny tends not to devolve even working decisions.

In most cases, the powerful have been reluctant to devolve their powers and resources onto the powerless, but some have tended to withdraw them from the powerless (Manor, 2003, p.3). Thus, power transition from the powerful to the powerless is a consequence obtained by the struggle of the powerless rather than benevolently offered by the powerful (Arnstein, 1969, p.222). As proposed in Section 2.5, this research perceives social reality as 'dynamic, unfolding relations' rather than 'a steady state' (Emirbayer, 1997, p.281). Correspondingly, the level of participation in a certain period may continuously change according to the interactions between actions and context. This research intends to disclose the dynamics of participation during the evolution of the Korean water sector.

Figure 1 A Participatory Map



Source: developed based on Pitelis and Sugden (1986, pp.72-73), Pretty (1995, p.1252) and Arnstein (1969, p.217)

2.4 The State, the Market and Governance

Whether the state or the market better serves economic and industrial development has long been a controversial issue. A market-centred approach based on the ‘Washington Consensus’ has been main stream thinking during recent decades founded on which economic development has been explained, and remedies for troubled economies have been prescribed. Neo-liberal ideas have suggested that the market is the best way to replace governments’ incapability. This perspective extended to Asian economies. Most neo-classical economists have attributed the economic success of the NICs in Asia to the countries’ strategies towards the market, in particular the international market. In their view, export-oriented strategies are the most important factor for the NICs’ economic growth (Balassa, 1988, p.S288). This is based on the perception that economic openness and small government led by the export-oriented strategies would reflect real prices. In turn, resources would be allocated into the most efficient use, and

finally, small market size would be overcome by exporting goods and services having competitive advantage in the international market (Wade, 1990, pp.4/14). They have argued that the role of the NICs' governments has been confined to promoting market friendly economic strategies¹⁴(Rhee et al., 1984, p.5, World Bank, 1991, pp.9/131, World Bank, 1993, pp.iv/32).

Nonetheless, the role of the governments in the NICs was far beyond the neo-liberalists' argument. Incentive systems the NICs applied to promote industrialisation were more sectoral and selective rather than functional and unselective (Wade, 1990, pp.12-13/30, White and Wade, 1988, p.7). Johnson (1982, pp.17-19), the first scholar introducing a developmental view to the Asian context, cites Japan as a state-guided market economy in which the government employed plan rationality and took on developmental functions. Depending on industrial rationalisation and restructuring plans, the Japanese government, in particular the Ministry of International Trade and Industry, decreased the proportion of light industry in Japanese total production and increased that of heavy and chemical industry in the 1950s.¹⁵ South Korea implemented similar strategies and policy instruments. The Economic Planning Board (EPB), like the Ministry of International Trade and Industry in Japan, established economic growth targets and executed diverse policy instruments set in Five-Year Economic Development Plans (FEDPs) (Shin, 2003, p.55). Despite some fluctuation of the Korean economy, it had been positively evaluated until 1997 when a foreign currency crisis, namely the IMF crisis, occurred. Korea was the 11th largest economy when the IMF crisis occurred, even though it had been one of the poorest countries until the late 1950s.

The IMF indicated some plan rational features as the structural problems of Korea¹⁶. As a condition of providing credits, the IMF requested South Korea to adopt market

¹⁴ The World Bank (1991, pp.6-9; 1993, p.9) illustrates that the strategies include (1) proper investment in people, (2) a competitive climate for private enterprise, (3) the economy open to international trade, and (4) a stable macro-economy.

¹⁵ The exports in the first half of the 1950s consisted of 30 per cent of fibres and textiles, 20 per cent of sundries and 14 per cent of machinery. However, fibres and textiles were down to 8 per cent and sundries to 14 per cent whereas machinery went up to 39 per cent due to the great investment by the first half of the 1960s (Ohkawa and Rosovsky, cited in Johnson, 1982, p.31).

¹⁶ They include (1) restriction on foreign investors' purchasing Korean businesses, (2) not fully opened domestic financial markets, (3) still restricted imports in some industries containing Japanese cars, (4) credit evaluation inconsistent with Western banking standards, (5) not independent central bank, (6) opaque corporate structure of large conglomerates (*the chaebol*), (7) high geared financial structure of corporations, (8) labour laws impeding layoffs (Feldstein, 1998, p.26).

rational policy instruments. Although there have been controversies on the appropriateness of the IMF's prescription, the Korean economy has drastically changed from a plan rational economy to a market rational economy.

Economic development has been mainly explained by the relationship between states and markets, in other words, market failure versus government failure (White and Wade, 1988, p.2, Johnson, 1982, p.18, World Bank, 1991, p.131). The late industrialisers have utilised government interventions to draw on financial resources and to distribute them into more focused industries. With the interventions, they could change their industrial structure from labour-intensive light industries to capital-intensive heavy and chemical industries, despite lack of comparative advantage in the latter industries. However, a state-guided market economy could not succeed without the consensus of the public (Johnson, 1982, p.22). When the state does not reflect public interests and bureaucrats exert their power for their own interests, the state guided market economy is vulnerable to corruption, bureaucracy, and ineffective monopolies (Johnson, 1982, p.23). In this case, the government fails.

Anchored on the IMF's prescriptions, the Korean government actively adopted and executed diverse and hard market rational policy instruments. However, some of them, including high interest rate and tighter fiscal policy, have been criticised due to their inappropriateness to the Korean economy, which was relatively sound and just suffered from a deficiency of short-term foreign currency (Feldstein, 1998, p.25). Rather, the income gap between classes has increased and the market power of large companies has grown at the expense of the small and medium enterprises (SMEs). Because the market is incomplete, it is vulnerable to failure.

When the market is imperfect and subject to increasing return to scale, it may not serve the public interest (Wade, 1990, pp.14-15). The market fails in such conditions. Korean economic development policies have changed by following the two poles: plan rationality and market rationality. In contrast, SDT, the main theoretical basis of this research, notices situations in which both markets and governments do not reflect public interest. The theory defines those situations as 'strategic failure' in which strategic

decisions serve just for the vested interests of a few such as dominant elites in large companies, monopolies in the markets and self-interested bureaucrats in the governments.

Governance entered the policy arena because of the scepticism about governing capability of the government in the complex, dynamic social reality (Eliassen and Kooiman, 1993, p.58). From a market-oriented perspective, governance refers to less government (Stoker, 1998, p.18). To avoid government failure, it suggests that the reduction of government is the best way, including privatisation, contracting-out, and cuts in civil service relying on market or quasi-market (Rhodes, 1996, pp.653-656). Nonetheless, market is not complete (Sugden et al., 2006, p.67). So the failure and centrality of market is usually unavoidable as the government is vulnerable to them (Jessop, 1998, p.38). SDT attends to the centrality of both the market and the state which inevitably results in failure by postulating that 'to govern by a few is to make strategic decisions for their vested interest (Sugden et al., 2006, p.67, Branston et al., 2006a, p.192)'. Beyond the dichotomy between the market and the state, this research relies on 'self-organising networks' (Rhodes, 1996, p.660, Jessop, 1998, p.29).

Good governance in this research refers to 'democratic governance with competitiveness' by which 'democratically determined aims and objectives are efficiently and effectively achieved' (Branston et al., 2006a, p.190, Bailey et al., 2006, p.564, Branston et al., 2006d, p.51). SDT sees competitiveness beyond the mere conventional comparison of economic performance or growth between economic entities and countries represented by some international indexes such as Global Competitiveness Index in World Economic Forum (Bailey et al., 2006, p.562, Branston et al., 2005, p.308). This is based on the insight that the conventional notion of competitiveness is too restrictive in the same vein with Pitelis et al.'s (1996, p.160) perception. They say that "the international competitiveness of a country is better defined as the degree to which the country can improve upon a (subjectively chosen) index of national welfare in a sustainable way, relative to other countries/nations." The notion is more inclusive and flexible because it is defined by democratically chosen purposes and aims within a concerned community which can embrace both conventional criteria and public interest criteria (Branston et al., 2005, p.325, Bailey et al., 2006, p.564).

2.5 A Processual Approach

2.5.1 Institutional Processualist's Approach

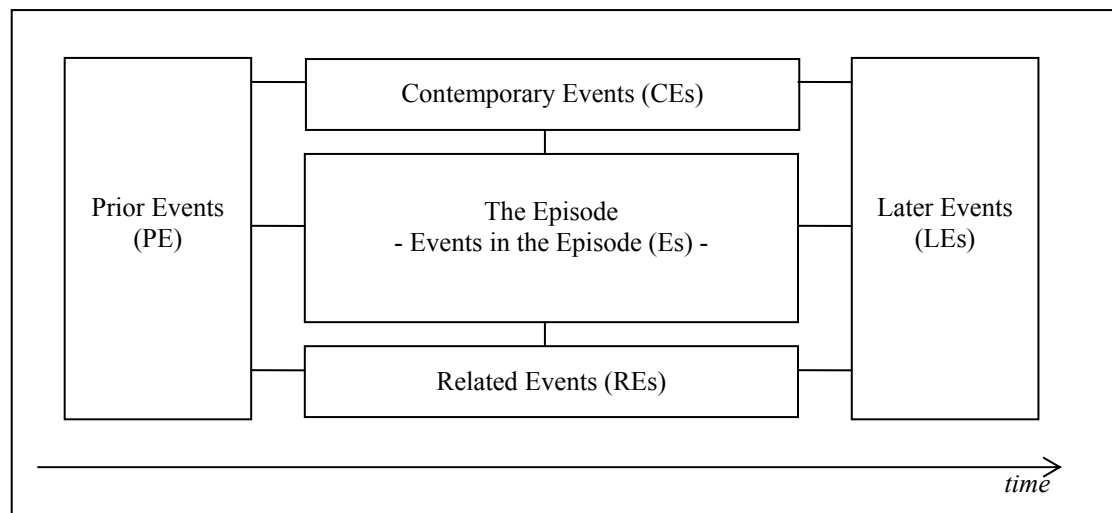
This research uses a processual approach as a bridge between the norm of SDT and the outcomes of strategic decision making, whether those are 'strategic failure' or 'strategic success'. Partly because SDT is in the process of theoretical development and mostly because strategic failure prevails, present SDT research has concentrated on building a normative theoretical framework and finding cases where strategic successes reside. SDT is still in the stage of developing an analytical framework. This research attempts to further these efforts by causally explaining the processes from the norm to the outcomes and by recognising semi-finished outcomes which are in part strategically successful and in part unsuccessful. For this attempt, Barzelay's (Barzelay and Gallego, 2006) processual approach, named 'institutional processualism', is adopted.

Processual analysis concerns 'a dynamic process' rather than 'a steady state', because, as Pettigrew (1997, p.338) says "Human conduct is perpetually in a process of becoming". His definition of process is 'a sequence of individual and collective events, actions, and activities unfolding over time in context' (Pettigrew, 1997, p.338). Time is an essential factor in process and a basis of causal explanation in processual analysis. Institutional processualism is also anchored on 'processual' reality, which is 'dynamic, unfolding relations' (Emirbayer, 1997, p.281). Processual analysis targets 'historically grounded analytical generalisation' (Barzelay and Gallego, 2006, p.538). That is, processual analysis does not attempt to describe a case history, but to explain a causal regularity of situation (Barzelay and Gallego, 2006, p.540, Hedström, 2005, pp.26/28, Pettigrew, 1997, p.339). Nonetheless, processual analysis does not linearly explain causal relation between events, but holistically approaches the case (Barzelay and Gallego, 2006, p.538, Hedström, 2005, pp.32, Pettigrew, 1997, p.340).

Actors, action, context, and structure have long been a dilemma in explaining social phenomena (Hay and Wincott, 1998, p.953). From the perspective of processual analysis, context can be causal inputs (Barzelay and Gallego, 2006, p.547) or the process itself is embedded in context (Pettigrew, 1997, p.340). Nonetheless, the

approach makes itself less structural than structural theories, such as historical and sociological institutionalism, by focusing more on temporal context than stable context. The institutional analysis pays attention to policy subsystems which are composed of large sets of diverse actors (Barzelay and Gallego, 2006, pp.547-548). Actors in policy subsystems are those who have some knowledge in problem areas and some intention to participate in the problem solving (Howlett and Ramesh, 1998, p.469, Sabatier, 1993, p.18). Various actors are involved in policy making processes, whether they are visible actors, such as the president, members of Parliament, and the media, or they are invisible actors, such as specialists, bureaucrats and congressional staff (Kingdon, 1984, p.208). Kingdon (1984, pp.208-209) suggests that visible actors play a greater role as agenda setters, while invisible actors are more active as alternatives generators.

Figure 2 The Analytical Structure of Institutional Processualism



Source: Modified from Barzelay et al. (2003, p.25)

Institutional processualism is converted to an instrumental analytical model by Barzelay et al. (2003). Figure 2 shows the analytical structure of the model. Episode is the central part of a case. Events within an episode are directly related to the process of analytical interest such as decision making and its outcomes (Barzelay et al., 2003, p.24). Prior events are events that occur before the episode and contemporary events are events that occur in the same time frame as the events in the episode. Those events can be causal sources of outcomes in the episode. Related events are events that concurrently occur with, but are influenced by the events within the episode. Later events occurring after the episode are included in the analytical structure as far as those are related to

exploring the episode (Barzelay et al., 2003, p.24). The model shows that the institutional processualist's approach consists of parallel and serial events and intends to explain the causal processes of the events (Barzelay et al., 2003, p.24).

2.5.2 Application of Institutional Processualism

Barzelay's processual analysis provides three benefits for a SDT based investigation into the Korean water sector. The first benefit is that this research can extend its analytical focus from finding and describing the 'state' of strategic failure and success, to the 'process' beyond those. In fact, the governance of the Korean water sector has not confined itself within a certain structure. During the industrialisation periods between the 1960s and the 1980s, the governance took a supply-centred structure. Since environmental accidents in the early 1990s, the supply-oriented governance structure has given way to a form of environment-oriented governance. This governance has been significantly shaped by the Korean economic crisis in 1997. During the evolution of the governance structure, democratic features have become significant, but it is still far from full democratic participation of all related actors. The change of governance is progressive, but not complete. By using the institutional processualism approach, this research pays attention to the 'processual' but incomplete change of the governance.

The second value is that policy subsystems embedded in institutional processualism allow this research to see diverse actors and their involvement in decision making processes. The Korean water industry is still under the tight control of public institutions. Thus, the president, ministers and bureaucrats are still important actors who influence strategic decision making in the water sector. The public interest residing in water and the water sector forces diverse social actors to engage in the decision making process. This reality demands that the research includes some dominant actors, such as the president, ministers and senior officials, in elites.

The third utility is that institutional processualism has a feature of dissecting cases with parallel and serial events to be explained. Social phenomenon is a complex totality (Hedström, 2005, p.2). Experience within the governance change of the Korean water sector is complex enough to distract our analytical focus into trivial elements. Institutional processualism helps direct this research to avoid this by dissecting the

complex totality into recognisable events and to focus on essential events (Hedström, 2005, p.2).

2.6 Concluding Remarks

This chapter attempts to set an analytical framework based on SDT, but also incorporates several theoretical perspectives including Moe's proposition of purposive group (1981), Pretty's typology of participation (1995) and Barzelay's institutional processualism (Barzelay and Gallego, 2006). This research pays attention to asymmetric decision making structures residing in the developmental state in Korea during the 1960s, the 1970s, and the modern market. SDT proposes that asymmetric decision making structures inevitably fail to meet the public interest. Based on this perspective, this research suggests that dichotomised explanations on economic and industrial development depending on the state and the market have inherent limitations. In diverse, complex and dynamic reality, governance, which is the outcomes of intense interactions between diverse actors, better explains the economic and industrial development. The market and the state are only parts of governance.

However, SDT to date has not sufficiently explained why actors, in particular the public, intend to participate in democratic governance, a common good, and how collective action problems can be overcome. This research explicitly considers 'beliefs' as another driver of human behaviour and classifies actors into self-interested actors and purposive actors based on Moe's (1981) suggestion. When self-interested actors, such as politicians, bureaucrats and corporate elites, dominate strategic decision making, whether they are in the state or in the market, the governance fails to reflect the public interest. Purposive actors, such as civic groups with shared beliefs and values, try to reflect those in strategic decisions. This research postulates that democratic governance evolves through the interactive processes between interest groups and purposive groups. Even though participation became the normal word in practice and literature, it has many meanings and the level of people's participation has been diverse. By incorporating Pretty's classification of participation in SDT, this research suggests a participatory map to position the levels of participation and decisions, and intends to investigate the changing dynamics of participation in the Korean water sector.

This research shifts the analytical focus of the previous studies using SDT from a ‘state’ of democratic governance to a ‘process’ of forming democratic governance by employing institutional processualism. From the historically grounded perspective of the processual analysis, governance always evolves rather than staying at a certain point. The governance of the Korean water sector has developed from the supply-oriented governance through the environment-oriented governance to the market-oriented governance. The research aims to find why and how it has evolved. Before analysing the main case, the Korean water sector, based on this analytical framework, Chapter Three reviews the developmental paths of Japanese and Taiwan economies and marketisation cases of the water sectors in England and Wales, Italy and Argentina as comparators.

Chapter 3 Case Reviews on Asian Economies and Water Reforms

3.1 Introduction

As a preliminary study, this chapter investigates comparative cases from the perspective of SDT in order to raise critical issues relevant to the developmental path of Korea's economy and the changing governance of the Korean water sector. This chapter reviews Asian economies and commercialised water industries, and investigates new ways to democratically control utility industries. Japan and Taiwan are selected as cases for the comparative study on Asian economies because people often put these three economies in the same bracket due to their fast economic growth and some common traits between them. Yet, Japan has experienced long-lasting economic stagnation since the 1990s. Taiwan has also suffered from economic declination since 2000. These developmental paths have been mainly explained by the market-driven explanation (Balassa, 1988, Rhee et al., 1984, World Bank, 1993) or the state-centred perspective (Johnson, 1982, Wade, 1990, White and Wade, 1988). Section 3.2 aims at uncovering the limitations of neo-liberal explanations about these economies, whereas the state-centred explanation will be thoroughly tested through the main case study on the Korean water sector.

Financial difficulties of many developed and developing countries have lead to reforms in their water sectors due to the huge amount of capital investment needed to improve water (service) quality and the expansion or rehabilitation of the associated infrastructure. The neo-liberal approach has led the industrial reforms. Nonetheless, the outcomes of the reforms have often confounded the expectations of reformers as analysed in Section 3.3. This is mainly because the evolutionary paths of the water sectors have been determined through severe interactions amongst related actors and contexts. For a comparative study on market-centred water reforms, this chapter focuses on England and Wales, Argentina and Italy. England and Wales drove the most radical water reform by selling their industrial assets to private firms in 1989, but Welsh Water turned to a company limited by guarantee in 2000, which is controlled by members who do not have shares. Argentina actively introduced a French type of privatisation, namely 'a concession contract', but mostly failed. The Italian water sector has been under market-centred reforms since 1994, but public provision prevails. Based on commonalities and differences between the three water reforms, the comparative study

in Section 3.3 tests whether SDT is feasible to explain the cases and suggests effective ways to reform the water sector.

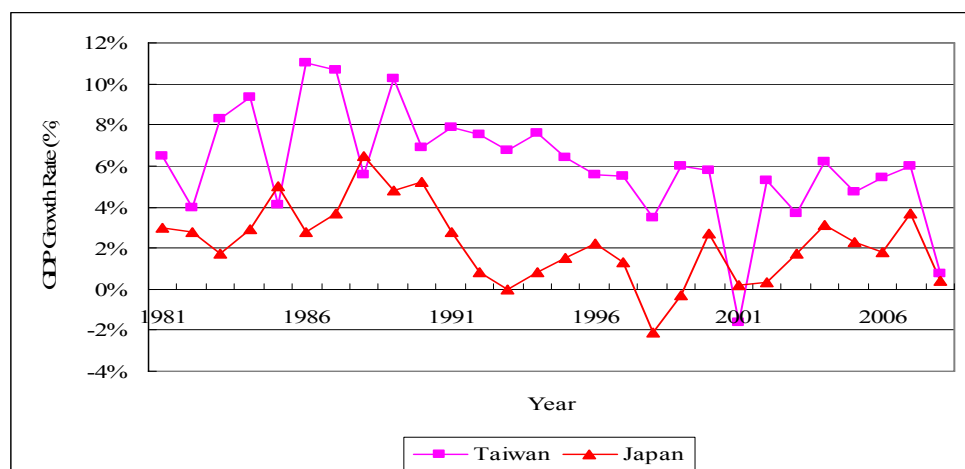
3.2 Developmental Paths of Japanese and Taiwanese Economy

3.2.1 Economic Status of Japan and Taiwan

After experiencing several decades of rapid economic growth until the early 1990s, the Japanese economy became sluggish, recording an annualised economic growth rate of only 1.15% between 1990 and 1995, and -0.41% during the 1997 Asian financial crisis (based on constant prices) as shown in Figure 3. The unemployment rate increased remarkably from 2.2% to 5.4% between 1981 and 2002 as illustrated in Figure 4.

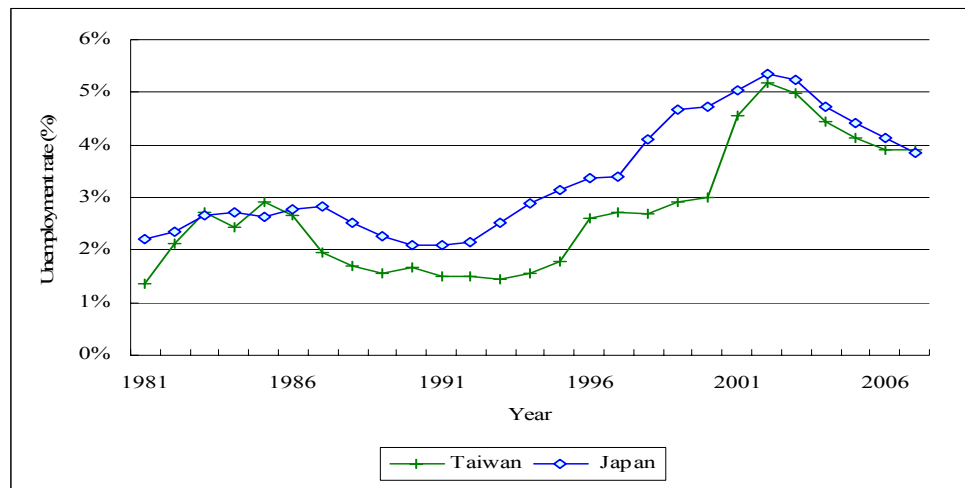
Taiwan also experienced very fast economic growth. Its average yearly growth rate was 7.37% from 1980 to 1996. Furthermore, Taiwan was not severely affected by the 1997 financial crisis and achieved a GDP growth rate of 4.47%. However, the rate declined to 3.76% between 2000 and 2008. Unemployment rate in Taiwan significantly rose from 1.4% to 5.2% between 1981 and 2002. Though these economic indicators reflect only a fragment of their economies, the data can be used as a reference for this comparative analysis.

Figure 3 The GDP Growth Rates trends in Japan and Taiwan



Note: The GDP growth rates are calculated based on current price GDPs.
Source: Republic of China (2010) and Government of Japan (2008)

Figure 4 The Unemployment Rate trends in Japan and Taiwan



Source: The International Monetary Fund (2009)

3.2.2 Different Paths of the State-led Economies

The Second World War and the wars that followed on mainland China brought about severe economic degradation, social disorganisation and military threats to not only Taiwan, but also Japan¹⁷. Security and economic rehabilitation were the main priorities of the local people. This context presented a good basis for the birth of the longstanding strong states (Wade, 1990, p.338). The political leaders of these two countries were immersed in economic growth policies and strategies to legitimise their seizing of power. Powerful agencies were created to push state-led economic development as a major means of accelerating rapid economic growth. Japan's Ministry of International Trade and Industry was at the forefront of its industrialisation policies. It preferentially supported large corporations, encouraging them to become 'national champions' as strong foreign competitors in their selected industries (Cowling and Tomlinson, 2000, p.F363). Preferential measures were introduced to the industries, included financial assistance, import quotas and high tariffs, tax breaks for exporters, and restrictions on inward and outward foreign direct investment (FDI) (Okuno-Fujiwara, 1996, p.27, Johnson, 1982, p.311).

Moreover, according to Cowling and Tomlinson's (2000, pp.F362-365, 2002, pp.376-378, 2003, pp.38-39) case study, financial institutions supported the emergence of large

¹⁷ The Korean War which broke out in 1950 is considered a contributor to the rapid recovery of Japan's economy because of the growth in Japan's weapons industry.

corporate groups called '*kigyo shudan*' by providing preferential loans. Money from the Bank of Japan flowed to '*keiretsu*' firms through their main city banks at very low interest rates. Moreover, the main banks were major shareholders, presenting information about financial and foreign markets and investment opportunities, and only intervened when the firms were in trouble.

Consequently, a very close relationship¹⁸ between the state and business in Japan was formed (Choi, 1999, pp.168-169, Johnson, 1982, p.331, Cowling and Tomlinson, 2000, p.F363, 2002, p.384). The government's preferential measures for industrialisation were vital for businesses to survive and prosper. Japanese businesses competed to secure more resources to expand their market shares rather than to raise profits. This type of competition was favourable for large firms because the government allocated its resources based on the scale or market shares of firms (Okuno-Fujiwara, 1996, p.29). Furthermore, this close relationship was furthered by the extensive movement of elites from government to business after retirement, where the old boys' network was based on common education, and numerous institutions (Johnson, 1982, pp.312-313).

Taiwan's counterpart to Japan's Ministry of International Trade and Industry was the Council for Economic Planning and Development. However, as an advisory organisation to the cabinet, it had no executive authority. The Industrial Development Bureau was another key economic agency which specified the council's plans, prepared lists of financial incentives and import controls, and provided administrative guidance to corporations (Wade, 1990, p.202). Functional industrial policies rather than sectoral ones had been carried out in order to promote exports, and improve products and production methods in Taiwan (Wade, 1990, pp.78/111/139). The National Party did not use preferential measures for large firms because it was afraid that the growth of big business would have both economic and political power (Wade, 1990, p.262).

Taiwan's financial system¹⁹ was dominated by state-owned banks accounting for over 70 percent of the assets of all financial institutions (Park, 2001a, p.854). They favoured

¹⁸ In the case of Japan, the government chose close cooperation with business rather than market competition to achieve rapid economic development and to overcome social disruptions after World War Two (Okuno-Fujiwara, 1996, p.30, Johnson, 1982, p.308).

¹⁹ The Taiwanese state prevented big businesses from owning financial institutions and establishing holding companies (Wade, 1990, p.264).

public enterprises. Public corporations borrowed 95% of their debt from the banks, while private firms borrowed only 60% between 1976 and 1981 (Wade, 1990, p.161). In particular, small firms, with assets of one to five million Taiwan dollars, raised their funds from the informal credit market (Tang, 1995, p.848).

Unlike Japan, Taiwan's relationship between the government and the private sector was 'cool and distant (Wade, 1990, p.276)'. This was because the Nationalist Party, which came from mainland China²⁰ after being defeated by the Chinese Communist Party in a mainland civil war, was fearful of the growth of islanders' economic and political power (Wade, 1990, p.262, Numazaki, 1986, p.490). During Japanese colonisation, islanders had little political and economic power. Thus, the mainlanders effectively suppressed the islanders' challenges and replaced the Japanese in charge at the end of the World War Two²¹ (Wade, 1990, p.75). This created ethnic tensions between the mainlanders and the islanders (Wade, 1990, pp.232-233/262). The Nationalist Party first took 'the land to the tiller' policy²² in order to diminish the landlord class on the island and to develop a class of small holders (Amsden, 1979, pp.352/367, Numazaki, 1986, pp.490-491). Economic elites did not involve themselves very much in policy making and bureaucratic elites seldom came to the private sector after retirement (Wade, 1990, pp.276-278). As a result, large private business groups became less significant in Taiwan than in Japan (Kang, 1995, p.569). The commonalities and differences between the developmental paths of Japan and Taiwan significantly influenced the industrial organisations and corporate governance of these nations.

3.2.3 Industrial Organisation and Corporate Governance

Japanese industrial organisation was generally more concentrated than Taiwan's (Hamilton and Biggart, 1988, p.S60). Japan promoted private business groups as 'national champions' in strategic industries, whereas Taiwan's regime heavily utilised

²⁰ As of 2010, Taiwan has 23 million people. 84% of the population is composed of descendants of people who migrated from mainland in the seventeenth century known as the "*benshengren*" and 2% are Taiwanese aborigines. Mainlanders known as *waishengren* who came from China after the World War Two account for the remaining 14% (CIA, 2010).

²¹ To illustrate, the Nationalist Party put down a mass rebellion in March 1947 by sacrificing 10,000 to 20,000 lives (Amsden, 1979, pp.350-351).

²² The Nationalist Party distributed public land formerly owned by Japanese in 1951 and forced landowners to divest their holdings to their tenants lives in 1953 by land reform (Amsden, 1979, p.352, Koo, 1966, p.150).

large state-owned enterprises²³ as their most significant policy instrument for big pushes²⁴ (Numazaki, 1986, p.490, Wade, 1990, pp.110/324-325, Cowling and Tomlinson, 2002, pp.374/379). Consequently, Taiwan's largest business groups could not compete with those of Japan in size²⁵ and their influence on the economy remained very stable²⁶.

Japan's industrial organisation was formed through a '*keiretsu*' which is a vertical subcontracting network between a main firm and its subcontractors²⁷ (Cowling and Tomlinson, 2000, p.F364, 2002, p.377, 2003, p.35). Though the ownership structure of *Keiretsu* seems to be dispersed between related firms through cross shareholdings after the dissolution of *Zaibatsu*, a type of family conglomerate, and the strategic decision making process is under the joint control of a few corporate elites (Cowling and Tomlinson, 2000, pp.F365-f366, 2002, pp.379-380). The subcontractors in a '*keiretsu*' have small equities and are mostly subject to the main firm's orders (Cowling and Tomlinson, 2000, p.F365, 2003, pp.38-39).

In Taiwan, business groups and private enterprises are generally controlled by family networks similar to the Japanese *Zaibatsu* and the Korean *Chaebol*²⁸ (Yeh et al., 2003, pp.25-27, Hamilton and Biggart, 1988, p.S60). However, Taiwanese groups are more coordinative than the Japanese *Keiretsu* and less hierarchical than the Korean *Chaebol* (Mahmood et al., 2008, p.14). The decision making mechanisms of Taiwanese business groups depend on coordination amongst leaders, rather than strong control by a single president or coordination via a presidential council²⁹ (Mahmood et al., 2008, p.14, Wade, 1990, p.324). While Japan has depended heavily on vertical subcontracting systems between big businesses and SMEs, SMEs in Taiwan have relatively

²³ Not only the government but also the Nationalist party and military hold their own corporations in the form of public or private firms (Wade, 1990, p.273).

²⁴ Taiwan's public corporations shared 35% of gross fixed capital formation between 1974 and 1977, which was much larger than Japan's 11.6% (Wade, 1990, p.177)

²⁵ To illustrate, among Fortune's 500 enterprises in 1988, Taiwanese firms were only four compared to 159 from Japan and 11 from Korea (Oru, 1991, p.8).

²⁶ Their contribution to GNP had been between 29.1% and 34% between 1973 to 1983, but the raising corporate holdings in Japan and the growth of *Chaebol* were remarkable (Hamilton and Biggart, 1988, p.S61).

²⁷ In a '*keiretsu*,' the subcontractors provide intermediate goods and services to the main firm while the main firm provide technical and managerial support to the subcontractors based on steady and cooperative relationship (Cowling and Tomlinson, 2003, p.38).

²⁸ Korean *Chaebol* will be analysed in Subsection 6.4.6.2 and 6.5.4.

²⁹ Hamilton et al. (2002, pp.369/377) classify Taiwan's decision making structure as 'patrilineal networks' and Korea's as 'corporate patriarchy'.

independent relationships with large enterprises (Luo, 1997, p.304, Feenstra et al., 1999, p.76). The flexible network among SMEs has been highlighted as a major success factor in Taiwan's economic development (Orru, 1991, pp.7-8/11, Ernst, 2001, p.97). According to Ernst's (2000, p.228, 2001, p.98) case study on the Taiwanese computer industry, corporations producing parts and components are extremely specialised and avoid heavy fixed capital costs. The firms avoid being locked into a particular production network through open and volatile production networks. The Taiwanese economic development model shows a strong possibility of a network-oriented economy consisting of SMEs, which has overcome the economies of scale theory by mainly supporting large companies, and by not having a close relationship with the state (Wade, 1990, p.276)'.

3.2.4 Market Liberalisation and Power Shift to Big Business

Financial and economic liberalisation driven by the U.S and international financial organisations, and industrialisation led by the states allowed business groups in the two economies to gain enough power to challenge the authoritarian and developmental states. Cowling and Tomlinson (2000, pp.F367-F370, 2003, pp.40-44) show how Japanese transnationals have grown through industrialisation and liberalisation. Due to the saturation of the domestic market which was a direct result of mass production³⁰(2000, p.F367), Japanese firms diverted their attention towards the world market. Continuous large trade surpluses propelled the United States and other western countries to take retaliatory action, which threatened Japan's future export growth rate (2003, p.41). Outward FDI was the most favourable option to Japanese transnationals against this threat. By the continuous persuasion of large firms, the Japanese government decided to liberalise outward FDI (p.F368). Liberalisation allowed large firms to expand their businesses into the international market. They grew to be world-leading transnational corporations, and 17 of them were on the list of the world's top 100 firms as of 2003 (2003, p.41). Japanese transnational corporations became strong enough to challenge international governments, at least in terms of deciding when, where and/or how to invest.

³⁰ Japanese technology was far behind that of the industrialised countries due to its closure for two decades during two wars. They focused on improving production processes, cutting production costs and enhancing the quality of existing products, but this was not so far truly new products that were invented or innovative technology (Okuno-Fujiwara, 1996, p.29).

A conspicuous characteristic of Taiwan's economy was the dominance of robust SMEs. The pressure of the United States for fair trade practices forced Taiwan to propel deregulation and liberalisation of the financial and industrial sectors (Luo and Chung, 2005, p.408). Based on these policies, previously weak business groups appeared to be an important part in Taiwan's economy (Carney, 2008, p.601). By the beginning of the 1990s, Taiwan liberalised legal restrictions on the privatisation of state-owned enterprises and banks, the constraints on outward FDI to mainland China, and private participation in major industries such as aviation, shipping and telecommunications (Luo and Chung, 2005, p.408). A significant point that should be mentioned is that the state licensed 15 commercial banks in 1991 which went beyond its original plan of six new banks due to pressures from big businesses (Lim, 2009, p.98). Consequently, the top 113 business groups' shares of net sales in GDP significantly increased to 44.79% in 1996 from the 100 largest groups' share of 22.88% in 1970 and the average number of firms under business groups also increased from 6.25 to 10.75 during the same period (Chung, 2001a, p.722).

3.2.5 Strategic Successes and Failures of the Economies

3.2.5.1 Economic Crises in the Economies

When the 1997 Asian financial crisis broke, the affect on Taiwan was significantly less than that of Japan due to its sound industrial structure and financial stability. Flexible SMEs were often referred to as a basic contributor to Taiwan's sound industrial structure (Lim, 1999, p.277, Huang and Xu, 1999, p.905). Each SME in Taiwan is highly specialised in single tasks and heavy fixed capital costs were reduced as a result, but, through web-like industrial networks, they overcome their weakness in regards to the scale and scope of economies caused by the specialisation (Lim, 1999, p.277, Ernst, 2000, pp.228-229). Taiwan's financial stability was mainly created by the 'cool and distant relationship' between the state and business. It rarely utilised direct financial measures for specific industries and private firms, such as selective access to governmental or government-guaranteed financing in Japan, but instead employed indirect measures like tax exemptions for new firms and support from public research

institutes was equal for SMEs and large (Lim, 1999, p.281). In this context, Taiwan's firms relied less on debt³¹, which reduced the financial risks of the country³².

When the 1997 Asian economic crisis broke out, Japan was in the middle of the so-called 'lost decade'. During the decade, from 1993 to 2002, Japan experienced severe economic stagnation recording an annual GDP growth rate of just 0.65% (Government of Japan, 2008). Nonetheless, until 1997 when the financial crisis erupted, the Japanese did not seem to worry about the severity of the economic situation because unemployment rates were kept below three percent, real wages did not significantly decrease and the Japanese had ample financial assets (Park, 2007, p.61). The 1997 financial crisis broke these assumptions. The unemployment rate reached exceeded 4% in 1998 and stayed at over 5% between 2001 and 2003 (IMF, 2009). Japan did not recover to its 1995 real GDP level of USD 5,036 billion until 2007 (IMF, 2009). The recession was significantly influenced by the aggressive loans of Japanese financial institutions based on the state's low interest policies³³ and the overinvestment of large firms, without proper governing mechanisms (Park, 2007, pp.23-26). Consequently, the web-like network economy of Taiwan, which has a remote relationship with the government, was more robust against the financial crisis than the keiretsu-favoured economy of Japan which was closely supported by the state.

3.2.5.2 Hollowing-out of the Economies

Cowling and Tomlinson (2003, p.45) illustrated that overseas production in the Japanese machinery sector significantly increased from 6.2% of the sector's total output in 1992 to 12.4% in 1997. Japanese transnationals contributed a considerable amount to the growth rate by increasing overseas production from 17.3% in 1992 to 31.1% in 1997. This growth of overseas production remarkably weakened the export-induced effect of outward FDI by reducing intermediate supplies from Japan from 55% in 1986 to 37% in 1996 (2000, pp.F373-374). This pattern of Japanese internationalisation troubled

³¹ The average debt-equity ratio of Taiwan's firms was 1.4 between 1985 and 1992 while that of Korea's top 30 Chaebol was 4.5 before the 1997 financial crisis (Huang and Xu, 1999, p.905).

³² As June 1997, the estimated nonperforming loans of Korea were 19% of all loans, 25.7 % of GDP and 128% of government revenue, but those of Taiwan were 4 % of all loans, 6.0 % of GDP and 50.5% of government revenue (Burnside et al., 2001, p.1164)

³³ As a result, four major financial institutions: Sanyo Securities, Yamaichi Securities, Tokushima Bank and Hokkaidō Takushoku Bank went bankrupt in 1997.

Japanese SMEs and loosened their traditional relationship with the main firms in the keiretsu networks. Japan's small firms' gross profit margin decreased from 2.5% between 1980 and 1985, to 1.6% between 1992 and 1997, and their return on capital reduced from 5.4% to 3.2% during the same period (2000, p.F375). Consequently, this hollowing-out process became a leading source of the recent economic stagnation in Japan (2000, pp.F375-F379).

Taiwan suffered from a high unemployment rate of 5% (IMF, 2009) and its economic growth rate has been very low since 2001 (Republic of China, 2010). As in the case of Japan, the hollowing-out effect by outward FDI seems to be significant in Taiwan. Taiwan's outward FDI has dramatically increased since 2000, compared to Korea and Japan³⁴. A main cause of the rapid increase was Taiwan's investments in mainland China. The outward FDI to China was recorded at USD 0.74 billion in 1991, increasing to USD 1.14 billion in 1993, and reaching USD 4.59 billion in 2003 (Yoon, 2005, p.237). The first stage of FDI to China was led by Taiwan's SMEs and concentrated on declining industries³⁵ (Hsu and Liu, 2004, p.210, Chen, 2003, p.88). This type of outward FDI to China did not seem to hamper Taiwan's economy (Chen, 2003, p.89). Yet, the participation of Taiwan's larger firms³⁶ directed FDI from labour intensive industries such as textiles, shoes and toys to capital intensive industries, for example mechanics, electronics and chemicals (Cho, 2004b, p.201, Yoo, 2001a, p.245). As large firms' production in China significantly increased, FDI-induced exports in the early stages significantly eroded.

3.2.6 Main Issues relevant to Korea's Economy and Water Sector

The role of both the state and the market in the developmental paths of Japan and Taiwan offers significant insights into Korea's economic and industrial development.

³⁴ Taiwan's share of outward FDI in nominal GDP increased from 1.2 % in 1993 to 2.6 % in 2002 while Japan recorded 0.8% in 1993 and 0.9% in 2002 and Korea did 0.4% in 1993 and 1.2% in 2001, and (Kang, 2004, p.145).

³⁵ The SMEs suffered the weakening of competitiveness due to rising production costs, revaluated Taiwanese dollars, increasing trade barrier of the developed countries, and mounted challenge by the developing countries (Yoon, 2005, p.240).

³⁶ Taiwan's larger firms which had already diversified their production into other regions including Southeast Asia chose China as a main production base when political risks stabilised (Chen, 2003, p.89).

Due to the fast economic development during the industrialisation periods, the state-led economies were evaluated as very successful cases. Economic and financial institutions which were controlled by the states accelerated the economic growth. Nonetheless, from the perspective of SDT, the states had very concentrated governance which a few political and bureaucratic elites dominated. The reasons why these centralised states succeeded in the fast economic development might be due to the devotion of political leaders to and the public's eagerness for rapid economic development. That is, the developmental ways of these countries might be congruent with the public's interest. However, the success may not be sustainable unless their economic, industrial and corporate governance becomes democratic mainly because of self-interested politicians and bureaucrats having imperfect information.

Japan's government developed a close relationship with large private firms and tried to make them national champions. Yet, Taiwan's government suppressed large private firms, but supported the formation of big public corporations. As a result, Japan had a hierarchical industrial structure, but Taiwan's structure was formed based on flexible networks between firms. Therefore, the scale of firms and industry is not a critical determinant for economic development. Due to the economic and industrial policies of Japan which favoured large business, the keiretsu have dominated the Japanese economy and industries, and have increased their policy making powers. In contrast, the establishment of large firms in Taiwan resulted from the liberalisation of regulations and the privatisation of the public corporations. Large firms which are controlled by a few elites for their own vested interests inevitably experienced strategic failures such as economic crises and/or industrial hollowing-outs. Consequently, the market-oriented policies also exerted their limitations. Thus, democratic governance in economic and industrial development becomes critical.

3.3 Water Reforms in England and Wales, Italy and Argentina

3.3.1 Background of the Reforms

The fundamental drivers of the water reforms in England and Wales, Argentina and Italy were the degradation of water service quality and the requirement of huge capital investment. In the case of the English and Welsh water sector, the requirement of capital

investment was estimated to have been between GBP 24 and 30 billion in order to meet stringent EU water quality regulations in 1989 (Bakker, 2003c, p.64). England and Wales chose to divest the water industry based on neo-liberal ideologies with the expectation that they could escape from the financial burdens of the huge investment and maximise efficiency.

Similar to the English and Welsh water sector, the Italian water sector suffered from economic inefficiency caused by the substantial fragmentation of the water sector³⁷, increasing demand for water quality and a lack of public funding for improving water systems (Asquer, 2009, p.7). To cope with these problems, the Italian government started reorganising the water sector by enacting Act 36/1994 in 1994, namely the Galli Law. The Galli Reform was aimed at vertical and horizontal integration, full cost recovery, clear separation of ‘service provisions and management’ from ‘regulation and control,’ and concession to private companies (Carrozza, 2009, pp.3-4, Lippi et al., 2008, p.627).

In the case of Argentina, the head of Buenos Aires water utility stated in 1991 that “the state cannot undertake the billions of dollars of investments needed in order to avoid a collapse of the water and sewer network”(CBC-TV, 2004). This statement clearly shows the financial inability of the Argentine government to improve water services. When the Capital City, Buenos Aires, privatised its water and wastewater services in 1993, only 73% of the population were connected to water networks and 56% to sewer networks (Schneier-Madanes, 2001, p.47). Water loss was at 50% due to leaks and water was often cut off and this occurred most frequently in the summer season when water demand was high. The choice made by the government of Argentina was to attract the massive investments through concession contracts with multinationals.

3.3.2 Different Paths of the Water Reforms

3.3.2.1 Divestiture in the English and Welsh Water Sector

³⁷ As of 1990, water suppliers were more than 5,500. Over 7,000 bodies were engaged in the collection of wastewater and more than 2,000 organisations served for the purification and disposal of wastewater (Lippi et al., 2008, p.623)

The UK's massive underinvestment resulted from the failures of the market and the government. Britain in the 16th century noticed the introduction of modern water supply systems by private companies (Hassan, 1985). Yet, according to Bakker's investigation (2003c), the private suppliers tended to 'cherry-pick the most profitable customers' and hampered the universal provision of clean water (p.51). Only 10 % of the population was served by piped water by the 1840s (p.50). Responding to these market failures, England and Wales chose municipalisation. Accordingly the local governments supplied 80% of domestic water by the early 20th century (p.52). As a universal service, water was provided at very low prices, which placed a significant financial burden on the municipalities and resulted in a lack of investments for replacing aging assets (p.52). The fragmentation of water provision between public and private suppliers was identified as a main source of the industrial inefficiency (pp.54-55).

As a way of solving these problems, England and Wales amalgamated 1,226 water suppliers into 198 between 1946 and 1970 (Competition Commission, 1990). Moreover, the nationalisation of the water and wastewater services was carried out by consolidating around 200 water undertakings, 1,400 local sewerage services and 29 river authorities into 10 Regional Water Authorities in 1974 (Bakker, 2003c, p.58). Yet, the financial burden was beyond the affordability of the government. Due to underinvestment, water quality severely declined and water pollution accidents frequently occurred. Consequently, this state-driven reform failed to satisfy what the public desired

These quality and financial crises justified the 1989 water privatisation by the Thatcher regime (Bakker, 2003c, p.64). The divestiture of 10 Regional Water Authorities with low prices and the lax regulations with high rates of return resulted in the sharp increase of corporate profits and share prices³⁸. These excessive gains of the private water firms with the high salaries of employees and the rapid rise of water prices provoked public concerns and drove the newly elected Labour Party to introduce the 'Windfall Tax' in 1997 (Chennells, 1997, p.280). These failures were not expected by the designers of the privatisation and resulted in the government tightly reregulating the water sector. The announcement of the 1999 strict review resulted in the big fall of the company share

³⁸ Some water companies enjoyed more than 50% increase of share prices in the first day of trading (Chennells, 1997, p.280)

prices by about 50 per cent (Bakker, 2003c, p.153). Consequently, a non-profit firm where members in the district directly participate in decision making processes was introduced in Wales as an alternative to state-driven reforms and the market-centred privatisation.

3.3.2.2 Concessions to Public-Private Firms in the Italian Water Sector

Differently from the English and Welsh water industry, the regional and local governments in Italy are key players and concession contracts with local public or mixed firms are dominant. In a top-down manner, the Italian government forced the regional governments under an obligation to set the boundaries for 'Optimal Water District' (*Ambito Territoriale Ottimale* (ATO) in Italian) (Lippi et al., 2008, pp.624-625). Nonetheless, the regional and local governments had strong veto powers against the Galli reform based on the principles of localism. In particular, in Northern Italy, local utility companies which had existed since the early parts of the twentieth century and enjoyed strong autonomy from the governments, made the progress of the Galli reform difficult (Lippi et al., 2008, pp.627-628).

To overcome delays to the reforms, the central government carried out threat and incentive strategies. Yet, the threat made by the Minister of Public Works, Antonio Di Pietro, regarding the non-provision of the 1994-1995 EU Community Support Framework funds was not effective for the mobilisation of the regional and local governments (Asquer, 2009, p.7). The central government generated special funds for wastewater treatment investments and utilised the 2000-2006 EU Community Support Framework funds as a requisite of the transposition of the water reform (Asquer, 2009, p.7). These incentives accelerated the transposition of the national legislation. 32 out of 91 ATOs had been established by 1999 and 87 ATOs existed in 2005 (Lippi et al., 2008, p.627).

Nonetheless, concessions to private companies have been very limited. Though the Galli Law, the Act 448/2001 and the Act 350/2003 set up contracting out through tender as a general rule, the Acts allowed the extension of extant contracts and concessions to

mixed public-private firms and ‘in-house providing’³⁹ (Asquer, 2009, p.8). In addition, the European Union has stressed the liberalisation of the market, but acknowledged the in-house providing of the public services (Carrozza, 2009, p.10). Civil society played an important role in deterring the privatization. In particular, the Italian Forum of the Movements for the Public Water⁴⁰ drove the association of progressive political parties to include the non-privatisation of water in their election programme in 2006 and contributed to the formation of the World Assembly of Elected Representatives and Citizens for Water at the European Parliaments in 2007 (Carrozza, 2009, p.12).

3.3.2.3 Concession to Multinational Firms in Buenos Aires

Differently from the English and Welsh, and Italian water sectors, the government of Argentina had directly provided the water and wastewater services through Obras Sanitarias de la Nación until 1982 when the federal government decentralised the water services to the provinces except Buenos Aires and some neighbouring districts (Lentini, 2004, p.87). Political and economic instability in Argentina had negatively impacted on the water sector. The country had experienced five military coups and had been ruled by military regimes for 23 years between 1930 and 1983 (Alcazar et al., 2000, p.9). During the second half of the 1980s, real salaries declined by 50%, unemployment had increased twofold, and annual inflation rates were higher than 3,000% (Alcazar et al., 2000, p.10). In this context, high operating costs and low political prices caused financial deficits, reduced network expansion and poor service quality (Delfino et al., 2007, P.1).

These political, economic and industrial crises became the basis of water privatisation in Argentina. The majority of citizens were also positive or neutral towards privatisation in Buenos Aires. Only 16% thought negatively in 1989 and around 35% were opposed to the privatisation (Alcazar et al., 2000, p.12). The newly elected Menem government launched the privatisation of the water sector in 1989. As of 1990, two thirds of the Argentine population were served by private operators (Delfino et al.,

³⁹ In-house providing means a direct concession to a local public corporation. Yet, the corporation is not allowed to be a multi-utility corporation and to participate in the water provision of other regions (Carrozza, 2009, p.8).

⁴⁰ The Forum consisted of local and international activists, progressive politicians, labour unions and NGOs

2007, P.1). In 1993, Buenos Aires' water was handed over to a private consortium by means of a 30 year concession contract (Lentini, 2004, p.89), though, the contract terminated in 2006 as analysed in Subsection 3.3.4.3.

3.3.3 Industrial Organisations and Governance Structures

3.3.3.1 Private Monopoly and Centralised Governance in the English Water Sector

The English Water Industry is regionally monopolised by private firms, whereas the privatised Welsh Water returned to a not-for-profit firm. Ten Water Service Companies provide water and sewerage services, while 12 Water Only Companies supply drinking water to their customers⁴¹. To counteract against the monopoly power of private water companies, England and Wales created the Director General of Water Service, an individual regulator, who control the regulation authority, the Office of Water Service (OFWAT). The rationale of a single independent regulator is that an individual regulator is a less bureaucratic, but more identifiable system of regulation than a faceless commission (Baldwin and Cave, 1999, p.71). According to long-standing criticism of over-personalisation (Vass, 2003)⁴², however, the 2003 Water Act replaced the individual regulator with the Board of Water Services Regulation Authority.

With changes to economic regulation, environmental regulation have co-evolved with industrial change. When the Regional Water Authorities were privatised, the newly established the National Rivers Authority took over their environmental regulation functions. In 1995, the Environment Agency was created by amalgamating the National Rivers Authority, Her Majesty's Inspectorate of Pollution, 83 Waste Regulation Authorities and parts of the Department of the Environment (Castro et al., 2003). The main issues in environmental regulation are how to address environmental degradation and how to meet the increased environmental and water quality standards requested by European and national legislation. In addition, due to the exclusion of the local governments from water and wastewater services in 1973, customer representation

⁴¹ Water Service Companies were created by the privatisation of ten public-owned water authorities while Water Only Companies have always been in the private sector since the Victorian era (Water UK, 2006).

⁴² Vass (2003, p.77) suggests that the transition to boards would blunt the directness of communication and accountability, and reduce regulatory innovation and favour risk-averse regulation

through the Consumer Council for Water and open consultation by the regulators became almost the only ways for public participation.

3.3.3.2 Public Dominance and Regionalised Governance in the Italian Water Sector

With similar reasons to the English and Welsh water sector, the central government of Italy has tried to integrated water and wastewater services for scale economies and privatise them through concession contracts to improve efficiency founded on the neo-liberal economics. However, the counteracting powers of the regional, provincial and local governments have been strong enough to redirect the reform. Consequently, though 87 ATO authorities out of the 91 planned were established until 2005 (Lippi et al., 2008, p.627), only four water concession were awarded to private companies and 14 ATOs were delegated to public- private joint-stock companies, whereas 23 water services were managed entirely by public companies⁴³ (Citroni, 2007, cited from Lippi et al., 2008, p.632).

The central government including the Prime Minister, the Minister of Environment, and the Minister of Public Works, is responsible for defining guidelines and standards for water resources surveys, environmental protection and economic regulation (Rossi and Ancarani, 2002, p.26). However, large autonomy is given to the ATO Authorities and lower levels of governments. At the regional level, regional, provincial and local governments significantly influence the governance of the ATO Authorities. The assembly for each ATO, the decision making body, consists of all the mayors from the local governments within the ATO. The assembly appoints a president and an executive body of each ATO Authority. The authorities have been under strong pressure from municipal councils, as well as regional, provincial and local bureaucrats (Lippi et al., 2008, pp.629/636).

In addition, according to Lippi et al.'s analysis (2008), regional contexts have significantly impacted on the organisation and governance structure of the Italian water sector. State-driven reform has been slow in Northern Italy because of municipal utility companies and strong localism (p.627). The utility firms and the municipalities have

⁴³ The rest of the ATOs were directly managed by the state, state agencies, municipalities or municipal firms (Lippi et al., 2008, p.628).

strong intentions to control the water and wastewater services. In Central Italy, the absence of local public water companies and the strong influence of the regional governments mitigated the resistance from municipalities (p.628). Therefore, concession contracts and the formal process of the Galli reform were relatively active. Southern Italy which suffers a scarcity of water resources has heavily depended on the central government. Water services in this region have been generally managed by the state or state agencies. Thanks to the state's support and the incentives of European Union Framework Programme, the establishment of ATOs was progressive. However, the significance of the central administration has impeded concession contracts through franchise bids because of their reluctance to lose control over the water services (p.628).

3.3.3.3 Private Monopoly and Regionalised Governance in Buenos Aires Water

Water privatisation in Argentina is a mixed type of the English and French models (Foster, 2005, p.23). The provincial governments own the water and sewerage infrastructures and delegated them to private firms through technical evaluations and financial bidding for a concession contract. Aguas Argentinas, a private consortium, won the water concession for Buenos Aires. Suez, a water multinational water firm based in France, led the consortium by owning 34.73% of its capital stock. Aguas de Barcelona, Vivendi, and International Finance Corporation, a member of the World Bank Group, participated in it (Loftus and McDonald, 2001, p.185). Consequently, the consortium was governed by water multinationals and international financial institutions.

The governments established an economic regulator, Ente Tripartito de Obras y Servicios Sanitarios, and employs price-cap regulation. The regulator exists for only a single firm, Aguas Argentinas (Casarin et al., 2007, p.244). The economic regulator is collectively governed by a board which consists of six directors. They are proportionately appointed by the federal government, the city of Buenos Aires and the Buenos Aires Province (Delfino et al., 2007, p.14). The regulatory governance of the Buenos Aires water has been severely criticised mainly because of its lack of accountability and capability. Many of the staff were transferred from Obras Sanitarias de la Nación, the national water authority, and do not have proper skill to effectively regulate (Crampes and Estache, 1996). It was also designed to be easily captured by the private consortium. The revenue of the regulator totally depends on surcharges on water

bills and fines to the firms that do not contribute to the revenue (Casarin et al., 2007, p.244). More seriously, politically appointed board members have competed to represent their appointing organisations and could not often reached agreements in due course (Loftus and McDonald, 2001, p.188). The regulator was often bypassed by the federal government (Zerah et al., 2001, p.8, Loftus and McDonald, 2001, p.188). This regulatory governance failed to protect the public interest and the firm exploited customers (Delfino et al., 2007, p.14).

3.3.4 Public Participation and Strategic Failures in the Cases

3.3.4.1 The English and Welsh Water Industry

Privatisation in the English and Welsh water sector produced overly negative outcomes such as sharp increases in water tariffs, huge gains in corporate profits and big rises in share prices and dividends. Privatisation has moved towards economic equity which focuses on efficiency maximisation, but has neglected social equity which emphasises universal service provision and the ability to pay (Bakker, 2003c, pp.124-125). To illustrate, after the privatisation, disconnection rates sharply increased from 8,426 properties in 1989/1990 to 21,282 in 1991/1992 (Bakker, 2003c, p.132). Consequently, the 1999 Water Industry Act prohibited the disconnection of domestic water consumers and non-profit sector users such as schools and hospitals (Bakker, 2003c, p.136). In contrast, private investment in sewerage infrastructure, which was mandated by the government, might contribute to the improvement of bathing water quality (DEFRA, 2010). Only 79% of bathing water in the UK met mandatory standards in 1992, but in 2000, a rate of 94% was achieved (DEFRA, 2002, p.4).

Yet, the underlying problem of the English model is the lack of public participation in strategic decision making. Regionalisation and nationalisation during the 1970s made the English and Welsh water sector delocalised. Almost the only way to reflect interests from localities is consumer representation through the Consumer Council for Water. A basic problem of this consumer representation is that public interest was predetermined based on neo-liberal ideologies, which focuses on economic efficiency, but neglects social equity. The main functions of the council are confined within the treatment of consumers' complaints and the provision of information about consumers to water

suppliers and the regulators (Consumer Council for Water, 2010, p.2). The council still has no right to participate in strategic decision making processes in the water sector and in water firms, even though the council was transformed to the independent consumer representative organisation from the customer committee in OFWAT by the Water Act 2003.

Consultation is another important mechanism for public participation in the regulatory governance. OFWAT increased the number of consultations from two per year in the period 1990-1996 to nine per year in 1997-2000 and also widened the range of participants (Page and Bakker, 2005, p.47). However, as Page and Bakker (2005, p.44) point out, this belongs to a lower rung of the participatory ladder. The Public is consulted, and is not allowed to be involved in strategic decision making directly. A few elites from the state and the private firms reserve power for strategic decisions and can simply disregard consultation results (Page and Bakker, 2005, pp.46-47).

3.3.4.2 The Italian Water Industry

The governance structure of the ATO Authorities is more democratic than the English case. Though ATO Authorities are under political pressure, the local governments can express and reflect their interests by directly participating in and/or negotiating outside the assembly (Lippi et al., 2008, p.630). Yet, people from localities can only indirectly take part in strategic decision making mainly through voting for local politicians or 'giving written comments to relevant authorities' (Rossi and Ancarani, 2002, p.32). The authorities can be captured by a few local elites from regional, provincial and local governments and existing local utility companies. The elites decide most decisions through bilateral negotiations outside the ATO Assemblies (Lippi et al., 2008, pp.630-631). Therefore, public participation in the decision making process in the Italian water sector might be on a lower rung of the participatory ladder.

The local governments retain decision making power within water service companies by preferring to provide concessions to local public or mixed companies, or by in-house providing (Lippi et al., 2008, p.633). Thus, problems caused by privatisation did not seem to occur in Italy unlike the English and Buenos Aires cases. The Italian water sector has stressed social equity more than economic efficiency. Water rights in Italy

have evolved from private to community rights and from individual ones to collective ones (Goria and Lugaresi, 2002, pp.15/17, Rossi and Ancarani, 2002, p.28). The community water rights embrace economical, environmental and social values (Goria and Lugaresi, 2002, p.17).

3.3.4.3 The Buenos Aires Water Industry

Citizens were simply excluded from the regulatory governance of Buenos Aires water service (Schneider-Madanes, 2001, p.50). Though there is a mechanism for consumer complaints, few have raised their voices through it (Loftus and McDonald, 2001, p.196). The process for public hearings was not established and a consultative committee did not exist in the regulatory framework (Foster, 2005, p.17). Therefore, citizens utilised diverse ways to have their voices heard by means of petitions to the regulator and demonstrations (Loftus and McDonald, 2001, p.197).

The lack of public participation and the inadequacy of regulatory governance resulted in strategic failures. The concession for the Buenos Aires water targeted to expand water supply from 70% to 100% and the sewerage system from 58% to 85%, to invest USD 4 billion, and to guarantee service quality such as water quality and water pressure by the end of the concession (Zerah et al., 2001, p.3). However, the licensee neglected to achieve those targets. To illustrate, the expansion targets of water and wastewater services were complied of only 46% and 70% respectively by 2003 (Delfino et al., 2007, P.2). More seriously, the private provider selectively expanded the water and wastewater services. Lucrative districts where expansion costs were low and affordable users lived met the targets, while poor districts did not meet them (Delfino et al., 2007, P.5). In contrast, thanks to several price revisions, the firms revenue increased twofold and return on equity was mostly over 20% between 1993 and 2001 (Delfino et al., 2007, P.10).

The highly geared financial structure of the firm⁴⁴ was shocked by the 2002 financial crisis where the Argentine peso was devaluated from one peso to one US dollar to three pesos to one dollar (Lentini, 2004, p.103). The firm's debt of USD 700 million and the

⁴⁴ The firm's debt to assets ratio were around 70% between 1993 and 2001 (Delfino et al., 2007, P.10).

water tariffs pegged to US dollar almost tripled (Lentini, 2004, p.103, Di Tella et al., 2008, p.8). The government decided to freeze the tariffs and had them converted to pesos by enacting the economic emergency law (Di Tella et al., 2008, p.8). The firm requested arbitration to the International Centre for Settlement of Investment Dispute for USD 1,600 million of indemnification (Lentini, 2004, p.103). President Kirchner criticised the firm for its lack of investment and non-compliance with the concession contract and posed a USD 1.3 million fine (Di Tella et al., 2008, p.8). Consequently, the concession to Aguas Argentinas was cancelled and the water business was re-nationalised on 22 March, 2006 (Di Tella et al., 2008, p.8).

3.3.5 Towards New Governance: the Welsh Water and the Mexican Electricity

The advent of ‘companies limited by guarantee’, Glas Cymru⁴⁵ and Dŵr Cymru, in 2000 in Wales with Yorkshire Water’s request for a mutual company⁴⁶ provides a possibility of community control over water service provision. These companies have no shareholders and are financed by bonds (Dŵr Cymru, 2008). Glas Cymru is a single purpose company owning, financing and managing Dŵr Cymru, while Dŵr Cymru is the service providing company for three million people in Wales. Most daily operations of Dŵr Cymru are outsourced to private companies such as United Utilities and Kelda Water Services through a competitive procurement process. Thus, the case of Glas Cymru and Dŵr Cymru provides an interesting possibility to consider, in more detail, democratic governance for strategic decision making and competition for operation and maintenance.

Glas Cymru is governed by members instead of shareholders. They have the right to oversee the management of the company, set and check performance targets and grant the decision of the board with the power to dismiss directors (Thomas, 2001, pp.104-105). To avoid ‘capture by special interests,’ the full membership profile is designed to

⁴⁵ Glas Cymru is a company limited by guarantee under the Companies Act 1985 and wholly financed by debt, to be formed for the sole purpose of purchasing the assets from Welsh Water (Bakker, 2003b, p.369). The members of Glas Cymru, who have no financial interest in the company and do not receive dividends, represent a cross-section of Welsh interests (Bakker, 2003b, p.369). The wider the membership, the more it begins to resemble a mutual (Birchall, 2002, p.190).

⁴⁶ A mutual company is owned by customers who have a shareholding that is limited in voting right usually on the basis of one member one vote (Birchall, 2002, p.190). Mutualisation enables customers to have the rights and duties of ownership, along with ultimate control over the business, but with control being spread so that no one group of members can take it over (Birchall, 2002, p.190).

reflect a wide range of customers and other stakeholders' interest by maintaining a balanced and diverse membership (Dŵr Cymru, 2007, p.3). As of 2008, 72 members serve for Glas Cymru (Dŵr Cymru, 2008). The ownership structure of a 'company limited by guarantee' might make local political leaders free from political pressure to keep water prices low. This is because the strongest point of 'company limited by guarantee' is low capital costs which result from financial soundness and low commercial risks. This model of service provision is likely to be applied from the local level to the regional level without damaging the locality of water and wastewater services when the integration of local water and wastewater service provision occurs for economies of scale.

Branston et al. (2006d) suggest a democratic control model for utility industries, recognising strategic failures which result from undemocratic governance of privatised utilities. Through an analysis on the Mexican electricity, they utilise pension funds for public control. The pension funds can be a leading shareholder and/or creditor of the privatising Mexican electric firms and directly involve in their strategic decision making (p.58). Because the pension funds are contributed by 47% of the labour force, their managers are under the strong pressure to represent the interests of the contributors (p.61). Yet, the decision making structure might not consider Mexican citizens who are not linked to the pension system (p.61). To remedy this flaw in full representation for whole Mexican citizens, they propose local forums where diverse concerns about localities can be discussed and represented to the electric firms or regulatory bodies (p.61). To increase economic democracy in the sector, direct elections for local representatives and pension fund managers are suggested (pp.60/62). As evidence for the practicality of this democratic control over the Mexican electricity, they illustrate pension fund investments in privatised firms in Chile and Eastern Europe, the idea of golden shares in Britain, and a second board for labour representation in Germany (pp.56/62). This reform model in electricity can be extended to water reforms in other regions where commercialisation needs to be considered.

3.4 Concluding Remarks

This chapter briefly showed that economic and industrial governance dominated by a few elites has strong possibilities of strategic failure. Especially, liberalisation in the

Asian economies and privatisation in the water sector based on neo-liberalism failed to meet the public interest. Japan and Taiwan have different developmental paths though they are both characterised as being state-led economies. The Japanese state kept a close relationships with big business, and supported them to be national champions, but closely controlled their abuses of market power (Cowling and Tomlinson, 2000, p.F367). The J-mode of Japanese firms, which is based on long-term employment and incentives for performance and length of service (Cowling and Tomlinson, 2000, p.F366), was well matched with the interests of employees. These drove the rapid development of Japan in the initial stage. Nonetheless, the high geared economy where large firms dominate financial resources caught up with Japan before and after the 1997 financial crisis.

In contrast, the main means of the Taiwanese government for economic development were public corporations which include financial institutions, infrastructure providers, and heavy and chemical industries. The state had cool and distant relationships with private firms. Rather, a flexible and long-lasting network between SMEs has been identified as a main source of its rapid economic growth. Moreover, due to the robust financial structure of private firms, Taiwan was less affected by the 1997 financial crisis. This web-like network of private firms can be a democratic development model for other countries. A market-centred approach in Japan and Taiwan driven by international institutions, western countries and large private firms hampered the relatively successful economies. Market liberalisation has favoured transnational companies and hollowed out the Japanese and Taiwanese economies.

The central governments of Britain, Argentina and Italy drove neo-liberal reforms in the water sector. Nevertheless, their types and degrees of privatisation are quite different according to intense interaction among actors, events and contexts. The English and Welsh water industry was divested and the Argentine one was reformed via concession to multinational water companies. Yet, in Italy, water and wastewater services are mainly provided by the public sector. The undemocratic governance of the privatised water industries in England and Wales and Argentina caused severe strategic failures in the forms of the sacrifice of universal services, the sharp increases in tariffs and the excessive profits of private suppliers. Consequently, the Welsh water sector turned to public control by becoming a company limited by guarantee in 2000, whereas the

concession contract of the Buenos Aires water was cancelled in 2006. The model of Glas Cymru and Dŵr Cymru in the Welsh water sector and Branston et al. (2006d)'s model of the Mexican electricity provide possibilities of democratic control in public utilities. These implications and results of the brief case studies in this chapter might provide a good basis for the main research on the Korean water sector. As an initial step, the next chapter will develop a methodology framework for the main research.

Chapter 4. Methodology

4.1 Introduction

This chapter aims to set up a research design which is ‘a framework of the collection and analysis of data’ (Bryman and Bell, 2003, p.32), in order to answer the research questions based on the analytical framework developed in Chapter One and Two. ‘Methodological purposiveness and methodological congruence’ (Morse and Richards, 2002, p.23) are utilised as principles of the research designs. Methodological purposiveness means that research purpose should be the centre of developing research questions and of selecting methods (Morse and Richards, 2002, p.24). This research challenges the neo-classical view of market, namely the ‘Washington Consensus’, and the developmental view of the state (Johnson, 1982, Wade, 1990) concerning economic and industrial development. This research argues, based on SDT, that the market or the state cannot be successful when they do not meet public interest. Where the decision making structure of the market and/or the state is under the hands of a few elites, strategic failure occur in the forms of market failure and/or government failure. This research suggests that democratic governance is the best way of achieving ‘the democratically determined objectives for (economic) development’ (Branston et al., 2006c, p.309). The purpose of this chapter is to guide the selection of research questions, cases and methods.

Methodological congruence involves making a coherent choice with research purpose and questions, cases to be studied, methods to be applied and the way of handling data (Barzelay et al., 2003, p.21, Morse and Richards, 2002, p.33). It also implies ‘a congruent way of thinking’ (Morse and Richards, 2002, p.33). Bearing the methodological congruence in mind, this chapter designs a way of research based on SDT and institutional processualism. This research sees that social reality is processual, whether it is developing, transforming or decaying (Pettigrew, 1997, p.338). That is, outcomes of a case are results of interaction between actors and context in each case (Pettigrew, 1997, pp.338/340, Barzelay and Gallego, 2006, p.539). Consequently, the research questions of this study are about the hows, whys and whats of some sequences of events (Pettigrew, 1997, p.338).

By adopting a processual view point, this research attempts to extend the perspective of SDT to a dynamic process from a steady state. This is because most studies of SDT have focused on (concentrated) ‘decision making structures’ of modern firms, industries and localities and suggested (democratic) ‘governance structures’ to remedy those structural problems. This research notices the change of governance structures, which embrace decision making structures, in an industry and a nation. It also raises questions about how and why the governance structures have changed. Moreover, anchored on these analyses, this research plans to suggest good governance for the cases to be studied. The Korean water sector is chosen as a case to verify the above analytical propositions, because of its dramatic change of governance and the author’s high accessibility to the case. While this is a single case study, this research divides the case into three sub-cases according to critical junctures which broke periodic stabilities and commenced another dynamic interaction in the Korean water sector. This might increase comparability between sub-cases and limited generalisability of research outcomes.

Institutional processualism provides the methodological basis of this research, of which framework basically consists of prior and contemporaneous events, and events within an episode. The framework proposes causal relations between prior and contemporaneous events, which are similar to independent variables, and events within an episode, which are like dependent variables (Barzelay et al., 2003, p.24, Michael, 2007, p.523). Methods for this research are designed to identify the events and analyse causal relation between the events. The cases of this research cover a long time span from the 1960s to the present and treat diverse issues from the economy, environment and society. Therefore, it is difficult to find suitable interviewees having detailed and comprehensive information. Therefore, this research strategically employs interviews and documents as information sources. For the sub-case of the supply-oriented governance of the Korean water sector which was formed during the 1960s and 1980s, documents are used more heavily than interviews. Interviews for the sub-case are unstructured. Interviewees were asked to tell their story based on their experience. The sub-case of the environment-oriented governance in the 1990s makes balanced use of unstructured interviews and documents. Unstructured interviews are employed to find the meanings of events, the basic beliefs and interests of related actors and their interaction in the sub-case. Thus, interviews focus on related events and action rather

than story telling. The sub-case of the market-oriented governance from the late 1990s relies more on interviews than documents due to more availability of reliable informants and less publication about the events. Interviews for this sub-case are more structured than those for the other two sub-cases. Interviewees were requested to explain the finely dissected events. All information acquired by interviews and documents is categorised and analysed according to the events.

This research aims to investigate good governance for the Korean water industry and a way to achieve it while explaining the process of the governance change. The governance of the Korean water sector has devolved from a centralised decision making structure of a few elites to a disseminated decision making structure in which diverse political, economic and environmental actors participate. However, competition between related actors to gain more power over strategic decision making has become harsh and not been coordinated and/or settled in a certain institution such as the state, the market, or governance. As a result, the industrial structure has become fragmented. Some argue that the outcome of the industry has significantly decreased. This research defines good governance as democratic governance with ‘competitiveness’⁴⁷. Therefore, economic efficiency can be an important factor of good governance. This research attempts to measure the efficiency trend of the Korean water sector by adopting a stochastic frontier analysis (SFA), to explain the reasons and implications of efficiency change and to use the analytical result to suggest good governance. Main methods adopted in this research are explained in detail from the next section.

4.2 A Single Case Study with Three Sub-cases

SDT proposes ‘democratic governance’ where the public interest is properly served and becomes the central basis of strategic decision making. SDT has defined and discovered ‘the state of and ways for democratic governance’ (Branston et al., 2006a, pp.194-195). This research attempts to extend the theoretical application from ‘states’ to ‘processes’ by examining a causal regularity of industrial development. That is, this research pursues the ‘historical generalisation’ (Barzelay and Gallego, 2006, p.538, Ragin, 1989,

⁴⁷ This research sees ‘competitiveness’ based on SDT, which refers to the ability of a locality, including a community, industry and nation, to satisfy the democratically determined objectives for development more effectively than other localities (Branston et al., 2006c, p.309).

p.35) of SDT by analysing the governance change of the Korean water sector. Inevitably, this analytical strategy needs deep understanding of context and historical events which determine industrial governance and organisation (Barzelay and Gallego, 2006, p.541, Cowling and Sugden, 1999, p.371).

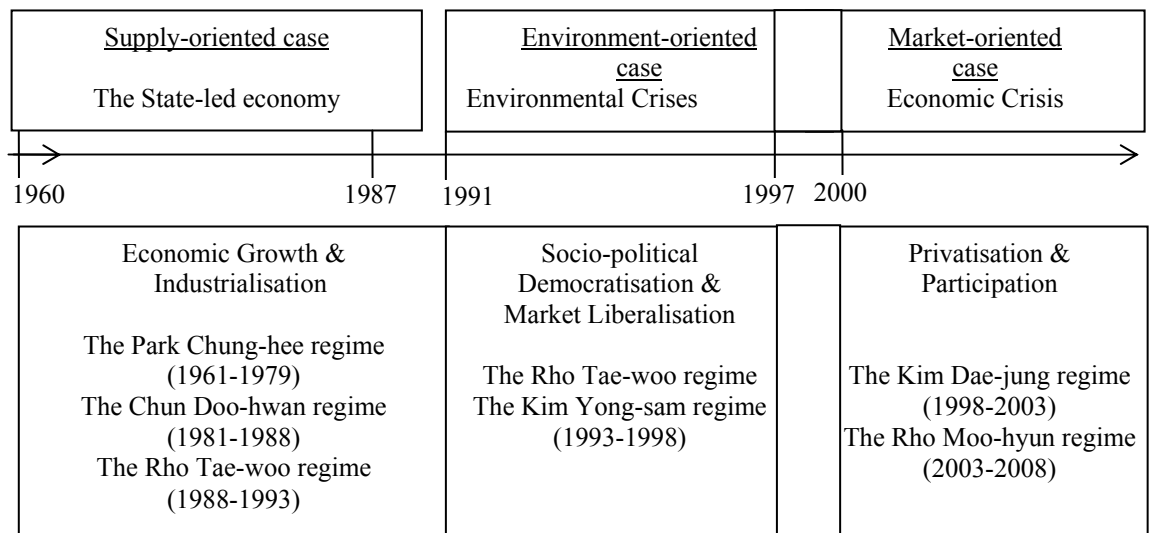
To verify this reasoning, this research selects the Korean water industry as a case based on the perception that the industry has experienced a dramatic change due to Korea's rapid economic, socio-political and environmental transition in a short period. This makes it a good starting point for the causal application of SDT. The case is analysed and interpreted in terms of the qualitative causal relationship between historical events and the change of industrial governance. A case study is a distinctive form of empirical study which can be used for explanatory inquiries as well as exploratory and descriptive research (Yin, 2003, pp.3/10, Ragin, 1989, p.35). However, a single case study is more vulnerable than a multi case study, since the former cannot enjoy the benefit of comparability as in the latter. By bearing this in mind, the research carefully designs research methods as follows.

Firstly, as Yin (2003, pp.10/31-32) points out, the theoretical dimension in designing the case study is very important, since a case study can become a useful tool of analytical generalisation which is to expand and generalise theories. In light of this, this research presents SDT, which focuses on 'the governance of the development process and the qualitative relationship between actors' (Branston et al., 2006b, p.82). This research explains the sequence of the qualitative interplay between action, context and events based on SDT.

Secondly, this research pays attention to significant historical events, namely 'critical junctures' (Pierson, 2000, p.251). Ragin (1989, p.35) argues that case (oriented) study seeks to be historically interpretable and causally analytic 'by piecing evidence together in a manner sensitive to historical chronology and offering limited historical generalizations which are sensitive together'. This research investigates historical events which are still strongly connected to the present, and interviews with the people engaged in the events are actively utilised. This research is a typical case study reflecting historical context to explain the current phenomenon. This strategy could provide strength to develop a causally analytic explanation.

Thirdly, this research recognises Ragin's claims (1989, p.53) namely "the analytical benefits from having two (or more) cases may be substantial", albeit it focuses on a single case to overcome the limits of time without damaging the analytical depth of the core case. More than two cases could grant contrasting situations: similarities and differences in which if the analytical findings support the hypothesised contrast, the results strengthen the external validity of the findings by representing theoretical replication (Ragin, 1989, p.54). To minimise the weakness of a single case study, the research divides the case into three sub-cases as shown in Figure 5.

Figure 5 Sub-cases of the Korean water industry



Sub-case 1 explains the reasons why supply-oriented governance had been formed in the Korean water sector. The focus of sub-case 2 is on the power transition between actors significantly influenced by 'environmental events' and also on the sequential interaction of the actors for achieving their interest and belief. The economic crisis, called the IMF crisis, punctuated not only the economic but also socio-political history. Sub-case 3 notices the crisis which produced several programmes and events in line with the basic strategies of the IMF. The events modified the organisation of the Korean water industry. The research interest of the sub-cases is in the changing processes. SDT flows under processual analysis. This research postulates that actors having vested interest and/or belief try to dominate or at least participate in strategic decision making

by formulating events, counteracting and responding to context, and competing and cooperating with other actors.

4.3 Methods

4.3.1 Unstructured Interviews

4.3.1.1 Unstructured Interviews with Key Informants

This research employs unstructured interviews and documents as main sources of information. However, as Arksey and Knight (1999, p.17) illustrate, the minutes of a meeting indicate what was discussed and decided, but they seldom explain who took what stance in which context and why certain stances prevailed over others. Therefore, interviews with key informants might reveal extensive micro-political activity concealed behind documents (Arksey and Knight, 1999, p.17). Nonetheless, the long time span covered by the sub-cases and several historical events within the sub-cases make it difficult to find good informants who have deep experience and knowledge. The availability of informants varies depending on sub-cases. To overcome this barrier, this research strategically employs both data collecting methods according to the availability and richness of the data sources. It attempts to triangulate data sources in order to increase validity⁴⁸ (Silverman, 2006, p.291). The lack of suitable informants and the variation of their knowledge drive this research not to use semi-structured or structured interviews which have fixed questions, though a semi-structured interview has some flexibility to improvise follow-up questions and to explore meanings and areas of interest that emerge (Arksey and Knight, 1999, p.7). Nonetheless, as explained, this research flexibly utilises the level of openness of interviews on a case by case basis.

Unstructured interviews require great commitment from informants. Therefore, one-to-one and face-to-face interviews are appropriate for the research. One of the most important points of this type of interview is to access key informants who were/are in positions to have good information. Thus, the study basically adopts theoretical

⁴⁸ Silverman (2006, p.291) broadly defines triangulation as combining “multiple theories, methods, observers and empirical materials to produce a more accurate, comprehensive and objective representation of the object of study”. However, Morse and Richard (2002, p.77) exclude multiple data sources.

sampling. It often utilises snowball sampling which can activate key players' human networks because 'access to key informants is best achieved through other elite members' (Bryman and Bell, 2003, p.357). This research conducted interviews with 27 interviewees. The interviewees are listed in Appendix Two without real names in order to preserve anonymity and a sample interview is attached as Appendix Three. The interviewees are theoretically selected according to the analytical framework of this research and the development of its fieldwork. The sample covers central and local government officials, academics and experts, leading NGO members, union leaders, directors of private companies, members of the Korean Water Resources Corporation (Kwater) and a director of the Korea Water and Wastewater Association. In order to increase the commitment of interviews, the interviewer tried to find silent places and carried out interviews for more than one and half hours in most cases. The interviewees received the brief of this research including research background, purpose and basic questions, before interviews to enhance the effectiveness of the interviews. Interviews taken for this research are cited in this thesis without references.

4.3.1.2 Data Quality Issues of Unstructured Interviews

Any research method has potential risks related to reliability, validity and generalisability. Reliability is concerned with whether alternative researchers would reveal similar information, while validity refers to the extent to which the researchers gain access to their participants' knowledge and experience (Saunders et al., 2007, p.318). Generalisability is a data quality issue concerning applicability of research using interviews to the entire population where the research is based on a small and unrepresentative number of cases. Researchers employing unstructured interviews use only an aide-mémoire as a brief set of prompts to him- or herself to deal with a certain range of topics (Bryman and Bell, 2003, p.343). Due to this feature, unstructured interviews can produce a wealth of qualitative data and the findings can generate deep insights into people's understanding of their social world (Arksey and Knight, 1999, p.7). Unstructured interviews have potential superiority of validity in that the flexible reaction between interviewers and interviewees allows meanings to be probed, topics to be covered from a variety of angles and questions to be made clear to interviewees (Sykes, 1991, p.8, cited in Saunders et al., 2007, p.319). Due to this feature, however,

this nature makes it hard to analyse unstructured interviews reliably (Arksey and Knight, 1999, p.7).

As two ways to satisfy reliability criteria in qualitative research, Moisander and Valtonen (2006, cited in Silverman, 2006, p.282) suggest theoretical transparency and process transparency. To enhance process transparency, this chapter tries to describe research strategy and method in detail, develop as clear an aide-mémoire as possible (refer to Appendix One), and maintain methodological congruence. For theoretical transparency, this chapter emphasises methodological purposiveness. In addition, by applying conceptual clarification provided by SDT, the research maintains clear focus when interviews are conducted. This methodological strategy might minimise the reliability problems resulting from unstructured interviews.

4.3.2 Documents

4.3.2.1 Documents as a Main Source of Information

Many (qualitative) researchers disregard documents as a source of information by perceiving that documents are only meaningful as ‘background material for real analysis’ (Silverman, 2006, p.154). However, documents, including archives, are one form of unobtrusive measures which can significantly discount a reactive effect caused by direct intervention of researchers in collecting data (Bryman and Bell, 2003, pp.229/404). In addition, documents are a source of establishing the fact of a case (Silverman, 2006, p.154). In line with these perceptions, this research uses documents as another main information source.

Major actors including the ministries, labour unions, NGOs and firms produce and disseminate their intentions and ideas in forms of new articles, journal articles, conference papers, official documents and books. Thus, documents can be a useful information source for doing research. Discourse analysts, in particular, perceive that “people seek to accomplish things when they talk or when they write” (Bryman and Bell, 2003, p.394). To illustrate, the ministries often publish materials for news reports and distribute them to the press for the purpose of exposing their policy intentions. NGOs and labour unions frequently hold conferences to persuade people of their movements.

Another practical reason to employ documents as a main research source is that this research covers a relatively long time span and wide research scope. This makes it difficult to count entirely on interviews. Thus, this research collects a wide range of documents produced by the central and local governments, research institutes, water companies, labour unions, and NGOs. Newspapers provide fruitful information to give a contextual background of the reformation. Main actors' discourses in news articles and conferences, and official documents are especially useful sources of data. Official statistics produced by the ministries and the central bank are used to find the change of the economic, social and environmental status of Korea. The fieldwork for the primary sources has been done in the archives of the Ministry of Public Administration and Security (MPAS) and the ME, the libraries of the National Assembly, Kwater, the Korea Environment Institute, the Korea Institute of Construction and Technology, and Chungbuk National University. The news database of the Korea Press Foundation, called 'KINDS', provides news articles and editorials of main newspapers from 1960 to the present. The databases of the Korea National Statistical Office and the Bank of Korea, named KOSIS and ECOS respectively, are utilised to acquire economic, social and environmental statistics. Several websites of ministries and corporations are sources of information. A variety of secondary sources, including books, journal articles and dissertations, are collected mainly from the libraries of the National Assembly and Chungbuk National University.

4.3.2.2 Data Quality Issues of Documents

Actors can conceal their true intentions when they talk or write. For example, even though ministries published that the reason they propel the privatisation or corporatisation of the Korean water industry is to increase the efficiency of the industry, they could have more interest in controlling power over the industry. That is, documents can be contaminated with biases. To reduce the biases, this research strictly follows Scott's four criteria (1990, p.6) of assessing the quality of documents: authenticity, credibility, representativeness and meaning.

This research depends heavily on news articles which are possibly related with authenticity and credibility (Bryman and Bell, 2003, p.415). Sometimes, the authorship

of mass media outputs is unclear and information provided by the press is distorted or interpreted by authors. To meet the criterion of authenticity, this research usually utilises the direct discourse of actors, including news interviews and official declarations, and makes use of news articles and editorials having clear authors, excluding readers' opinions. To increase representativeness, this research utilises a wide range of newspapers, which have different ideological perspectives from conservatism to progressivism.

Official documents, another important written source for this research, published by ministries, labour unions and NGOs can be seen as authentic and as having meaning, but are problematic in terms of credibility and representativeness (Bryman and Bell, 2003, pp.413-414). This research utilises the actors' published documents to find their direction of action and their decision making about events. However, this research crosschecks discrepancies between real intention and expressed intention and/or between action and expressed intention with opposite actors' documents and/or interviews. Similar attention is applied to other sources of documents, including conference papers published by main actors and public statements of social actors.

4.3.3 A Stochastic Frontier Analysis

4.3.3.1 A Complementary Research Strategy

The research employs an efficiency analysis to complement the findings from the qualitative methods. Complementarity as a multi-strategy research facilitates the understanding of social reality by dovetailing the different aspects of an investigation (Bryman and Bell, 2003, p.482). The case study provides qualitative understanding about causal regularity of the governance formation, but is short of information about quantitative outcomes of the current governance structure of the Korean water sector. Therefore, even simple efficiency comparison between Korean water suppliers might provide good information about a direction towards good governance.

Efficiency in production economics refers to "the degree of success producers achieve in allocating the inputs at their disposal and the outputs they produce, in an effort to meet some objective" (Kumbhakar and Knox Lovell, 2000, p.15). From the perspective

of production economics, the objective of producers is to maximise outputs from a given set of inputs or to minimise inputs in the production of given outputs (Kumbhakar and Knox Lovell, 2000, p.15, Coelli et al., 2005, p.43). This objective is too simple to accommodate the diverse needs within an industry or an economy (Branston et al., 2006c, pp.308-309), but productive efficiency is still a good indicator of the outcomes of an industry or an economy. Even though an industry or an economy chooses a less efficient way of production, for example, to fulfil social purposes, to achieve the 'limited' economic efficiency is important given the constraints of democratically chosen objectives. Therefore, by qualitatively explaining the evolution of the Korean water sector and quantitatively measuring the change of its efficiency, this research strategy might provide better understanding about the influence of the governance change of the sector on economic outcomes and make better suggestion of good governance for the sector.

4.3.3.2 A Basis of Efficiency Measurement

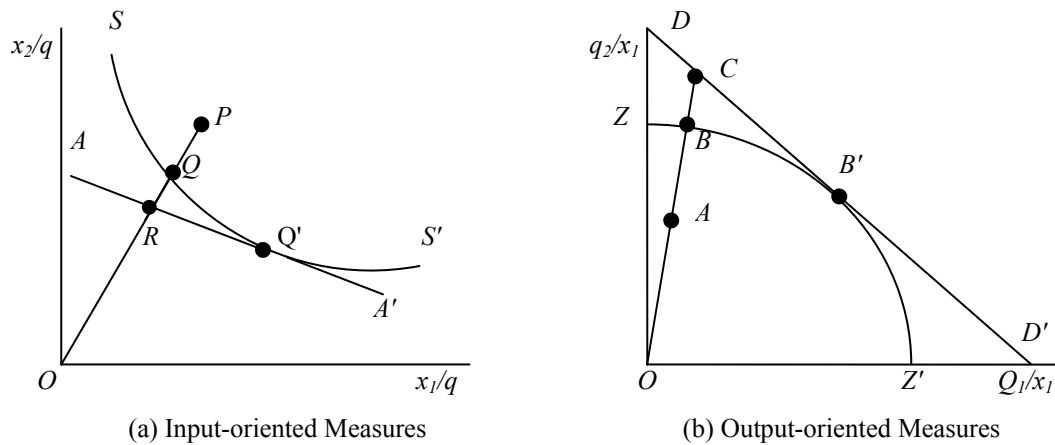
Distance functions are the basis of main efficiency measures including Data Envelop Analysis and SFA. The 'distance' of a distance function means the distance from a production frontier to an observation. If a company uses more inputs than a company on the production frontier, the former company can reduce its inputs without reducing the present outputs or increase its outputs without increasing its inputs. Input distance functions explain the reduction of inputs with constant outputs, while output distance functions make the increase of outputs with constant inputs.

Economic efficiency is composed of technical efficiency (TE) and allocative efficiency (AE) (Farrell, 1957, pp.254-255, Coelli et al., 2005, p.51). Technical efficiency refers to a firm's ability to maximise output from a given set of inputs while allocative efficiency refers to a firm's ability to allocate the inputs in optimal proportions, given the factor prices of the inputs and technology (Farrell, 1957, pp.254-255, Coelli et al., 2005, p.51). Figure 6(a) illustrates input oriented measures. Farrell (1957, pp.254-255) illustrates efficiency measures in a simple case in which firms employ two inputs (x_1, x_2) to produce a single output (q), under the conditions of constant return to scale. Due to the assumption of constant returns, all relevant information can be drawn in an isoquant diagram. The isoquant curve, SS' , represents the efficient firm's various combinations

of the two inputs to produce unit output. The point P is the observation of a firm which produces a unit of output by using more inputs than an efficient firm. Without reducing the output, the firm can proportionally reduce its inputs to the point Q which is on the frontier curve. QP represents technical inefficiency. In percentage terms, QP/OP represents the firm's technical inefficiency and OQ/OP represents its technical efficiency. The isocost line AA' shows a slope equal to the ratio of the two input factor prices. Both Q and Q' are technically efficient because they are on the isoquant curve SS' . However, Q' is more cost efficient than Q in that Q' can reduce inputs by QR . RQ/OQ is the allocative inefficiency of Q and OR/OQ is the allocative efficiency of Q . Consequently, cost efficiency can be expressed as follows:

$$CE = TE \times AE = (OQ/OP) \times (OR/OQ) = OR/OP \quad (3.1)$$

Figure 6 Efficiency Measures



Source: Coelli et al. (2005, pp.52/55)

Conversely, revenue efficiency is based on the concept of output distance functions. Coelli et al (2005, pp.54-57) illustrate a constant return to scale case with a single input (x_1) and two outputs (q_1, q_2). Figure 6(b) depicts the case where ZZ' is the unit production possibility curve from the given input. Inefficient Firm A can increase the outputs without consuming extra input. Thus, AB is the technical inefficiency of Firm A and the output-oriented technical efficiency of the firm can be measured by the ratio of OA/OB . The line DD' represents output price vector. By reallocating the mix of outputs, Firm A can increase its revenue by BC . The firm's allocation efficiency is represented

by OB/OC . Consequently, revenue efficiency (RE) can be measured as below:

$$RE = TE \times AE = OA/OB \times OB/OC = OA/OC \quad (3.2)$$

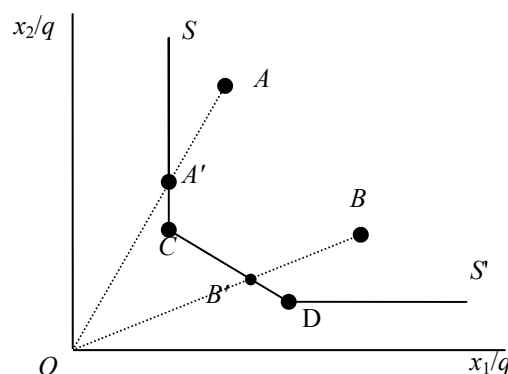
4.3.3.3 The Choice of an Efficiency Measure

The concepts of distance and efficiencies described above are the basis of most frequently used efficiency measurers: Data Envelopment Analysis (DEA) and Stochastic Frontier Analysis (SFA). DEA, as a non-parametric method, does not need to specify a functional form of the frontier, nor a distributional form of inefficient deviations from the frontier. Due to this characteristic, DEA is more flexible than SFA, but vulnerable to outliers. This is because DEA cannot distinguish the effects of statistical noise from those of technical inefficiency. In addition, it is impossible to statistically estimate the distributions of efficiencies. DEA utilises linear programming methods to produce a piece-wise frontier, which linearly connects best performing firms. A model of DEA can be expressed as follows (Coelli et al., 2005, p.162):

$$\begin{aligned} & \max_{\mathbf{u}, \mathbf{v}} (\mathbf{u}' \mathbf{q}_i / \mathbf{v}' \mathbf{x}_i), \\ & \text{subject to } \mathbf{u}' \mathbf{q}_j / \mathbf{v}' \mathbf{x}_j \leq 1, j=1, 2, 3, \dots, I, \\ & \quad \mathbf{u}, \mathbf{v} \geq 0 \end{aligned} \quad (3.3)$$

where, \mathbf{u} is an $M \times 1$ vector of output weights and \mathbf{v} is a $N \times 1$ vector of input weights. This functional form is to find values for \mathbf{u} and \mathbf{v} , maximising the efficiency measure for the i -th firm, subject to all efficiency measures should be less than or equal to one.

Figure 7 An Efficiency Measurement by DEA



Source: Coelli et al. (2005, p.165)

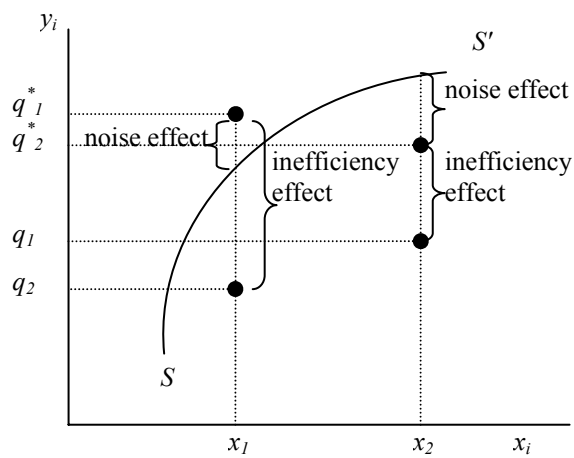
Coelli et al. (2005, pp.162-168) illustrate a case of DEA consisting of four firms. In Figure 7, two efficient firms *C* and *D* define the frontier of the case, *SS'*, which runs parallel to the axes. This parallel shape does not usually occur in parametric functions. This causes the problem of ‘slacks’. *A* and *B* are inefficient firms. The efficiency of firm *A* is OA'/OA and that of firm *B* is OB'/OB . However, in the case of firm *A*, input x_2 can be reduced by $A'C$, called input slack, without reducing output q . Output slack can occur in cases of multiple outputs.

SFA as a parametric method has the features of being stochastic. A strong point of SFA is that it can separate statistical noise from inefficiency effect. However, it requires a distributional form for the inefficiency term and a functional form of production. Coelli et al. (2005, pp.243-244) exemplifies a stochastic frontier production model of two firms producing a single output with a single input based on Cobb-Douglas production function:

$$\ln q_i = \beta_0 + \beta_1 \ln x_i + v_i - u_i \quad (3.4)$$

where q_i represents the output of the i -th firm, x_i is its single input, β_1 is an unknown parameter, and v_i and u_i is the statistical noise and technical inefficiency of the i -th firm respectively. SS' in Figure 8 is the deterministic frontier: $\ln q_i = \beta_0 + \beta_1 \ln x_i$.

Figure 8 A Stochastic Production Frontier



Source: Coelli et al. (2005, p.244)

q_1 and q_2 are the real observations of Firm 1 and 2 respectively, which are influenced by both noise and inefficient effects. q_1^* and q_2^* are the outputs without inefficiency effects. q_1^* and q_2^* can be expressed as $\ln q_1^* = \beta_0 + \beta_1 \ln x_1 + v_1$ and $\ln q_2^* = \beta_0 + \beta_2 \ln x_2 + v_2$ respectively. Noise effects can be positive and negative. The case of Firm 1 shows that even if its real outcome is below the deterministic frontier, the positive effect of noise makes q_1^* above the deterministic frontier.

An input-oriented stochastic cost frontier model based on the Cobb-Douglas cost function can be expressed (Coelli et al., 2005, p.266):

$$\ln c_i = \beta_0 + \sum_{n=1}^N \beta_n \ln w_{ni} + \sum_{m=1}^M \phi_m \ln q_{mi} + v_i + u_i \quad (3.5)$$

where c_i is the observed cost of firm i ; w_{ni} is the n -th input price; q_{mi} is the m -th output; v_i is statistical noise and u_i represents inefficiency. Cost frontier models can specifically decompose cost efficiency into technical efficiency and allocative efficiency, but needs the information of input (factor) prices. Difficulty of acquiring input (factor) prices is a limitation of cost frontier functions. Where price information is not available and/or the assumption of cost minimisation or revenue maximisation is not appropriate, distance functions can be directly used (Coelli et al., 2005, p.264). Input distance functions are often used in the case that firms can control inputs more than outputs, while output distance functions are frequently employed when outputs are more controllable than inputs. The Cobb-Douglas functional form of input distance functions can be expressed (Coelli et al., 2005, p.264):

$$\ln d_{ii}^I = \beta_0 + \sum_{n=1}^N \beta_n \ln x_{ni} + \sum_{m=1}^M \phi_m \ln q_{mi} + v_i \quad (3.6)$$

The Cobb-Douglas functional form assumes:

$$\sum_{n=1}^N \beta_n = 1. \quad (3.7)$$

$\ln d_i^I$ is not observed. By substituting Equation 3.7 into Equation 3.6, the following equation can be obtained:

$$\ln x_{Ni}^I = \beta_0 + \sum_{n=1}^{N-1} \beta_n \ln(x_{ni} / x_{Ni}) + \sum_{m=1}^M \phi_{mi} \ln q_{mi} + v_i - u_i \quad (3.8)$$

where $u_i \equiv \ln d_i^I$ is a non-negative variable. Considering the strengths and weaknesses of DEA and SFA, in particular the vulnerability of DEA about outliers mainly resulting from the exclusion of noise effects, This research employs SFA because, as many experts (Moon, 2003, pp.34-35, Kim, 2008, p.87, Kim, 2003a, pp.201-202) have pointed out, the financial and statistical data of the Korean water sector have not been systematically and reliably collected and managed. A more detailed model is developed in Chapter Eight.

4.4 Concluding remarks

SDT postulates that uneven governance structure of institutions results in strategic failure, whether they belong to the private domain, like multi-national companies and private industries, or to the public domain, like public organisations and public utility sectors. It has endeavoured to find ways and/or state of strategic successes where the public interest is fully reflected in strategic decision making. This research pays attention to places between complete strategic failure and success, based on the perception that most cases are located between two extremes. To investigate this assumption, this research chooses the Korean water industry as a single case which has experienced a dramatic governance change in a relatively short time. The research classifies the single case into three sub-cases according to the phase of the governance change. This arrangement allows this research to at least partly enjoy the benefit of comparative analyses.

The governance change of the Korean water sector is inevitably ‘processual’. This reality leads the research to adopt a processual analysis, namely institutional processualism. This analytical tool helps the research dissect experiences within the three sub-cases into concurrent and serial events and discover their causal relations. The causal regularity can be a basis for explaining the reasons why such a governance

structure comes into existence and of proposing persuasive ways towards democratic sectoral governance.

As methods of collecting data, this research strategically employs unstructured interviews and documents. For the recent sub-case, interviews are more utilised than documents while documents are more widely used for the former sub-cases. To increase the reliability of interviews, this research tries to maintain process transparency and theoretical transparency by employing a clear interview guide including aide-mémoires and clarifying the theoretical perspective based on SDT. Scott's four principles of document quality (1990, p.6) are this research's foundation of collecting and analysing documents. Documents having clear authorship are employed and a varied range of documents are utilised to increase representativeness. In addition, documents are cross checked with interviews for credibility.

This research employs SFA in order to analyse the efficiency of the Korean water supply sector. Applying an econometric analysis to the Korean water sector has significant limitations caused by lack of proper data and oversimplification of causal relation between factors into a few variables. Nonetheless, the SFA can show a numerical aspect of the governance change and cast questions about why it happens and how it can be handled. This strong point of the SFA cannot be expected from the processual analysis. Therefore, the multi-strategy research based on complementarity might provide better understanding of our cases.

Empirical chapters start from the next chapter, which investigates physical, socio-economic and environmental context. These structural factors as context constrain the decisions making choice sets of actors while actors shape them. Nonetheless, the next chapter focuses on more stable factors which do not change in a short period whereas interaction between relatively temporal context, events and action is analysed from Chapter Five to Seven.

Chapter 5 Physical, Socioeconomic and Environmental Context

5.1 Introduction

This chapter aims to investigate physical, socioeconomic and environmental context in the Korean water industry. This is because the context is a critical determinant of forming and changing an industry and its structure. The physical characteristics of goods shape the range of feasible alternatives (Sabatier, 1993, pp.20-21) and industrial structure (Katz and Shapiro, 1986, p.823, Economides, 1996, p.677, Olson, 1965, pp.15-16). For instance, public or collective goods which cannot be excludable in nature are most likely to be provided by the government (Olson, 1965, p.15). Collective goods, as Ostrom's illustration (1991, pp.13-20) of a fishery and a herd, can be provided by communities or be placed under the regulation of the government. The basic features of water determine a monopolistic structure of the water industry (Littlechild, 1986, p.5, Cowan, 1997, p.83, Ogden and Anderson, 1995, p.536).

Socioeconomic factors have been recognised as greatly influencing economic and industrial development (Branston et al., 2006b, pp.86-88)⁴⁹, and policy (Sabatier, 1993, p.20, Heclo, 1974, pp.6-9/17-64, Wilensky, 1975, pp.47-49)⁵⁰. Ecological economists have also argued, from a perspective of sustainable development, that the socio-economic structure is a deterministic factor of sustainability (Turner et al., 1998, pp.269-271, Zander and Kachele, 1999, pp.318-320). The Korean water industry is not an exception. The industry has evolved responding to physical and socioeconomic conditions and their changes. To illustrate, governments constructed large dams and multi-regional and local water supply systems during the industrialisation era between

⁴⁹ Branston et al.(2006b, pp.86-88), from the perspective of SDT, point out that the economic, social, political and cultural background and its historical transition are key issues explaining industrial economic development and public policy.

⁵⁰ Sabatier (1993, p.20) also stresses structural aspects for policy making based on Heclo (1974). Through a comparative study between Britain and Sweden, Heclo (1974, pp.6-9/17-64) shows that earlier industrialisation and urbanisation in Britain increased more pressure on change of social policy than in the more agrarian Sweden. It adds that newly emerged policy is a result of reaction against defects perceived to be emerging from the previous policy change. Wilensky (1975, pp.47-49) also points out that modernisation, which is the significant change of socioeconomic structure, has been the most influential factor in the change of social policy, while the political system has limited influence on the policy making process.

the 1960s and the 1980s, in order to solve a lack of water resources and the disparity of water resources between regions and seasons.

Water is a part of nature. Thus, the water industry is closely related to the environment. The change of the environment has been a significant influence on the change in the water industry. Water contamination cases in Korea in the 1980s and 1990s moved policy weight from water resources development to water demand and quality control.

This chapter starts by analysing the physical features of water resources in order to find the extent to which they shape the water industry. The investigation of socioeconomic and environmental context follows to explain driving forces for the Korean water industry evolution. This chapter depends heavily on secondary dataset including published statistics, government documents, research papers and several water-related government plans.

5.2 Physical Characteristics of the Water Industry

5.2.1 Location and Topography

5.2.1.1 Location

South Korea is located in East Asia, on the southern half of the Korean Peninsula, which extends from the eastern part of the Asian continent. The latitude of the peninsula is between 33 degrees 06 minutes 43 seconds north and 40 degrees 00 minutes 42 seconds north, which is similar to that of Spain, Italy, Turkey, China, Japan, and the U.S.A (Korea Land Portal, 2007b). Its longitude lies between 124° 11' 04" east and 131° 52' 21" east, and the meridian of 127° 30' east passes through the middle of the Korean Peninsula (Korea Land Portal, 2007b). Korea, however, shares the same standard time zone, meridian of 135° east, with Japan, which is nine hours earlier than Greenwich Mean Time (Korea Land Portal, 2007b).

South Korea, bordering North Korea, is surrounded by three seas: the Yellow Sea to the west, the South Sea to the south, and the East Sea to the east as shown in Figure 9. The

Korean Peninsula is neighbouring China, and Russia to the north. It is placed to the northwest of Japan across the Korea Strait, and to the east of China across the Yellow Sea. This geographical location plays a main role in determining the climate of the peninsula, which is characterised as having four seasons and a continental climate (Korea Land Portal, 2007b).

South Korea has a land area of 99,595.88 square kilometres, which is around 44.7 per cent of the Korean Peninsula (223,097.88 km²) (National Geographic Information Institute, 2007). The Korean Peninsula is similar in size to the United Kingdom, Ghana, Romania and New Zealand, and South Korea alone is similar to Austria, Portugal, Hungary and Cuba Time (Korea Land Portal, 2007b).

Figure 9 A Map of Korea and Vicinity



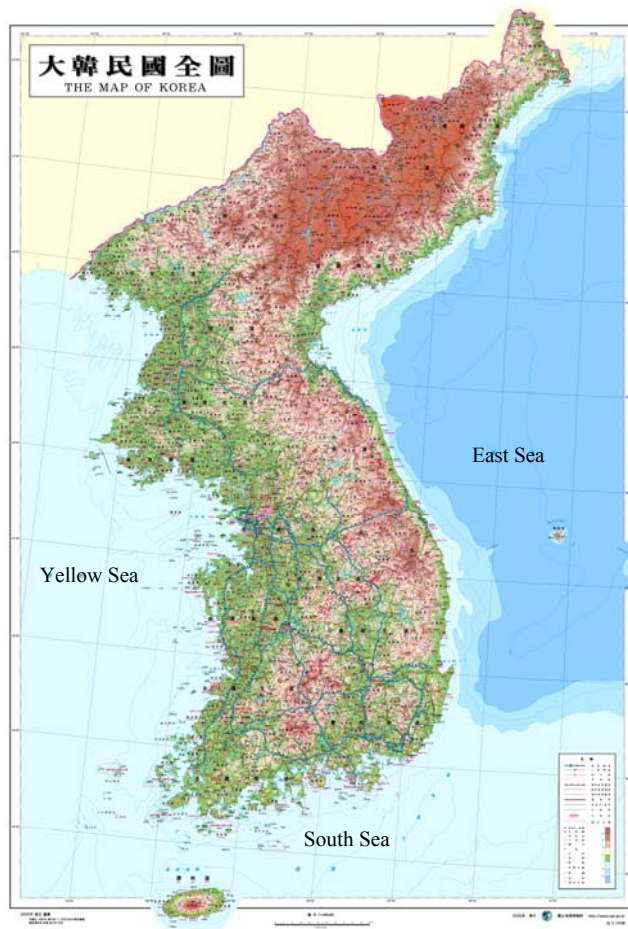
Source: National Geographic Information Institute (2005)

5.2.1.2 Topography

A large number of successive, rugged mountain ranges crisscross the Korean Peninsula as shown in Figure 10 (WebKorean, 2007). The peninsula is characterised by topography of high land in the east and low land in the west due to the mountain ranges

(Korea Land Portal, 2007b). High mountains are mostly located in the eastern area of the peninsula and form the backbone of the country. The mountains drop abruptly to the East Sea, so the east coast has a few small plains (Sampson, 2002, p.23). In contrast, as the mountains slowly lower their height to the west, the western and the southern areas accommodate relatively large plains and most main rivers flow across the plains (WebKorean, 2007). About 65.3 per cent of South Korea consists of mountains and highlands, whereas the rest is made up of lowlands (Korean Government, 2006, p.15).

Figure 10 A Topographical Map of Korea



Source: The National Geographic Information Institute (2005)

High-east and low-west topography structures river flow. Most of rivers run into the Yellow Sea and the South Sea. The largest river of South Korea is the Nakdong River (length 506.17 km; basin area 23,384 km²) which flows from Mt. Ham-Baek in the middle east region to the South Sea (EnCyber, 2007). The river accommodates two metropolises, Daegu and Busan, and several industrial cities, such as Gumi and Changwon. The Han River (length 481.7 km; basin area 26,018 km²) runs from Mt.

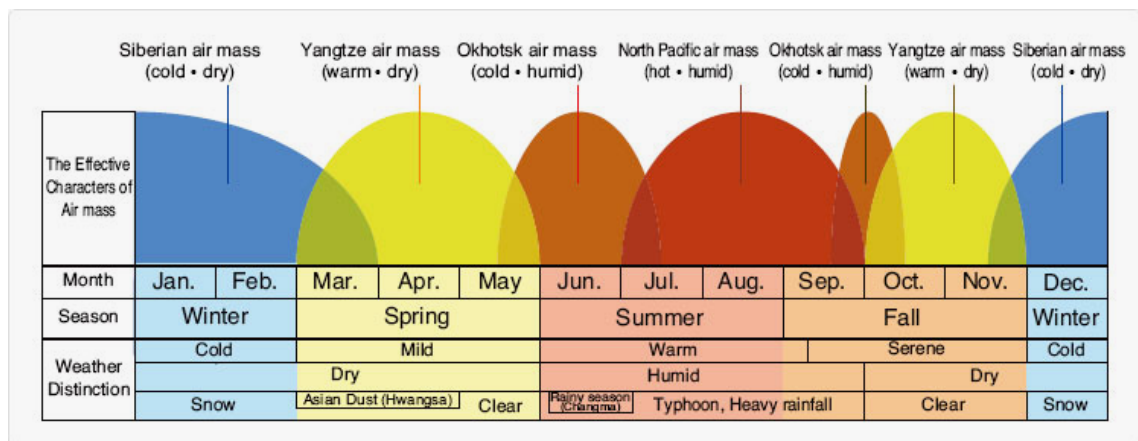
Geumgang and Daedeok, through Seoul, to the West Sea (EnCyber, 2007). This river supplies water for the National Capital Region which has more than 48 per cent of the South Korean population. The Geum River is the third river (length 394.79 km; basin area 9,912.15 km²) in South Korea which originates from Jangsu in the central region and ends in the West Sea (EnCyber, 2007). Daejeon, the fifth largest city having 1,475,961 citizens (Korea National Statistical Office, 2006c), belongs to the basin of the river. The Yeongsan River (length 115.5 km; basin area 3,371 km²) is one of the major rivers (EnCyber, 2007). The river has room for the sixth largest city, Gwangju, which has a population of 1,415,953 (Korea National Statistical Office, 2006c).

5.2.2 Climate and Water Resources

5.2.2.1 Climate

South Korea, located in the middle latitude of the Northern Hemisphere, has a temperate climate with four distinct seasons. As shown in Figure 11, however, the country has both continental and oceanic climate features (Korea Meteorological Administration, 2007). In the winter, the movement of freezing cold and dry air masses occurs from the Northwest due to high atmospheric pressure developed over the Siberian region (Korea Land Portal, 2007a). In summer, the hot wind rising in the northern Pacific causes humid and hot days (Korea Land Portal, 2007a). North-easterly winds blowing in late spring and early summer are a typical regional wind which accompanies drought due to the expanding Okhotsk sea air mass (Korea Land Portal, 2007a).

Figure 11 Seasonal Variation of Climate in Korea



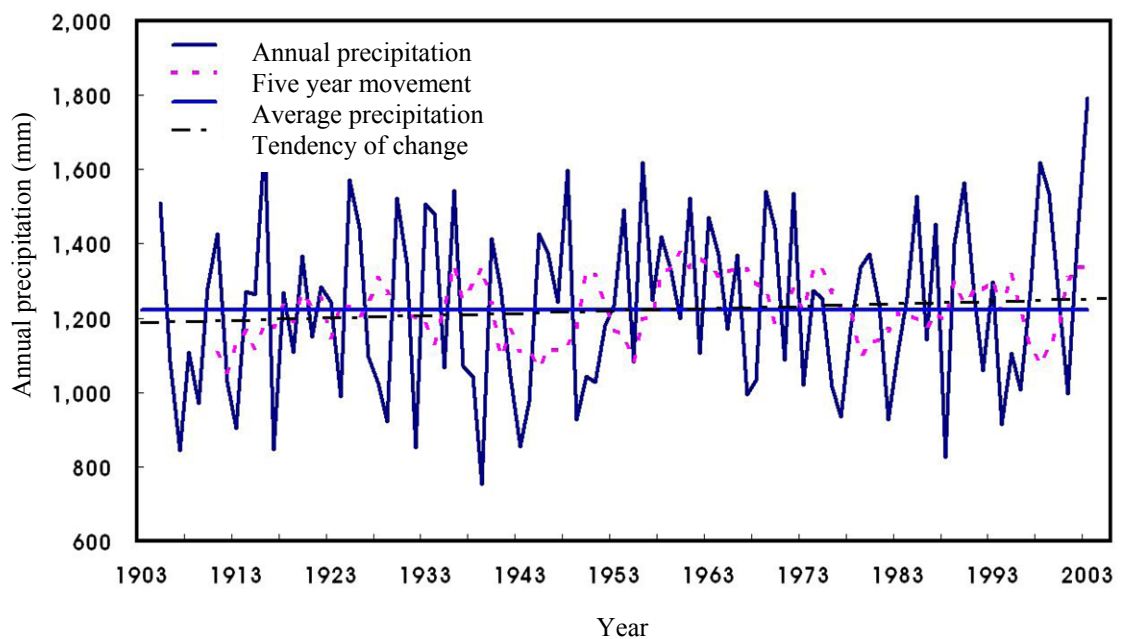
Source: The Korea Meteorological Administration (2007)

The typhoons generated in the tropical areas between July and September accompany the high wind and heavy rainfall, often resulting in floods and causing great losses in the areas it affects (Korea Land Portal, 2007a). The annual mean temperature ranges from 10 to 16 degrees Celsius, but a wide temperature difference between summer and winter exists (Korea Meteorological Administration, 2007). The monthly mean temperature lies between 23 and 27°C in August, the warmest month, and between – 6 and 7°C in January, the coldest one (Korea Meteorological Administration, 2007).

5.2.2.2 Rainfall

The annual precipitation ranges from 1,000 mm to 1,800mm in the southern part and from 1,100mm to 1,400mm in the central part of South Korea (Korea Meteorological Administration, 2007). More than half of the annual precipitation is concentrated in a rainy period, locally called “*Changma*” typhoon, which continues for 30 days on average (Korea Meteorological Administration, 2007). Two or three typhoons, out of about 28 generated annually in the Northwest Pacific, have influences on the Korean Peninsula from June to October (Korea Meteorological Administration, 2007).

Figure 12 Variation of Annual Precipitation in Korea



Source: The Ministry of Construction and Transportation (2006, p.11)

Only one-fifth of the annual precipitation, however, falls during the dry season between November and April (Ministry of Construction and Transportation, 2006, p.10). Though precipitation has slowly increased for the last 100 years, with huge seasonal variation of precipitation, the annual variation has grown since the 1960s, as shown in Figure 12. The anthropical effect on increasing greenhouse gases related to industrialisation is considered a major driving force of climate change, while various natural variations in the atmosphere, land and ocean affect the change (Korea Meteorological Administration, 2007). The urban climate is also severely affected by the environmental changes associated with construction, air pollution and increasing population (Korea Meteorological Administration, 2007).

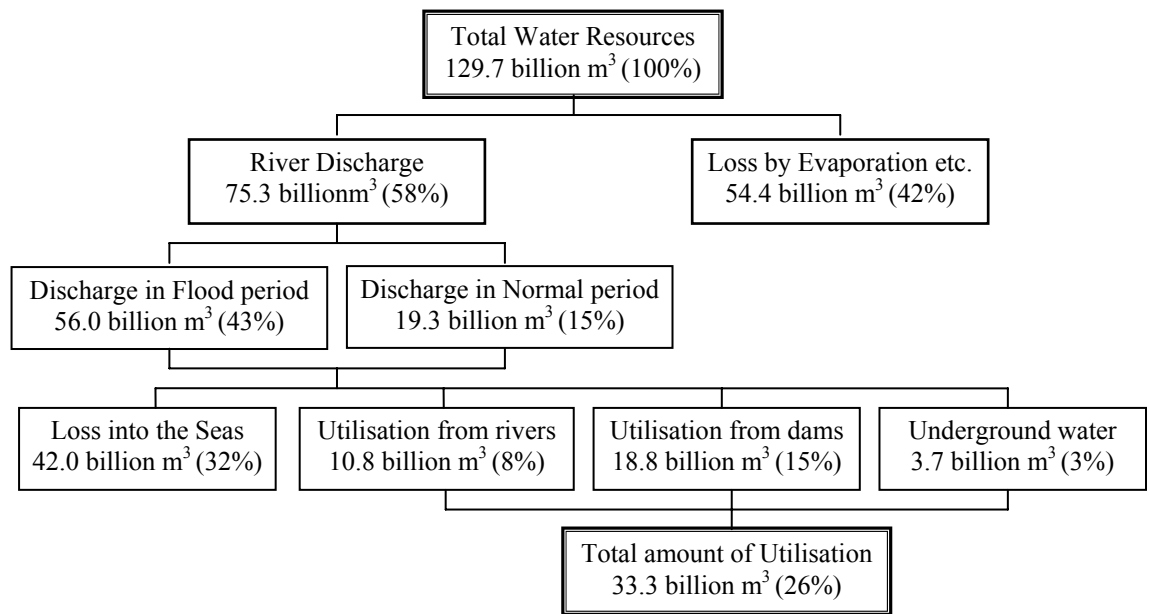
5.2.2.3 Water Resources

According to the 'National Water Resources Plan' by the Ministry of Land, Transport and Maritime Affairs (MLTM) (2010, pp.8-19), South Korea has an annual precipitation of 1,277mm on average, which is 1.6 times more than the world's average precipitation of 807mm. The total annual rainfall per capita of Korea ($2,629\text{m}^3$) is, however, only one-sixth of that of the world ($16,427\text{m}^3$). Total amount of water resources in Korea is 129.7 billion m^3 as of 2007 (100%), but no more than 33.3 billion m^3 (26%) is used for human activity and 42 billion m^3 (32%) directly flows into the sea without utilisation as shown in Figure 13. The rest (54.4 billion m^3 , 42%) is lost by evaporation and transpiration. The steep slope of mountains occupying 65.3 per cent of the land areas and shallow layers of topsoil make river flow rapidly run into the seas in a rainy season. Therefore, coefficient of river discharge variation⁵¹ is between 90 and 270 (MLTM, 2010, p.11). That is much higher than those of other countries. For instance, the River Thames in England has the coefficient of eight, the Rhine in Germany eighteen, and the Mississippi in the U.S. three (Ministry of Construction and Transportation, 2006, p.11)⁵². The concentration of population in large cities, including the National Capital Region, and the regional difference of precipitation lead to extreme regional variation of renewable fresh water per person per year (Korea Meteorological Administration, 2007, MLTM, 2010, p.12).

⁵¹ The ratio of minimum discharge to maximum discharge

⁵² The Ministry of Construction and Transportation is a predecessor of the MLTM.

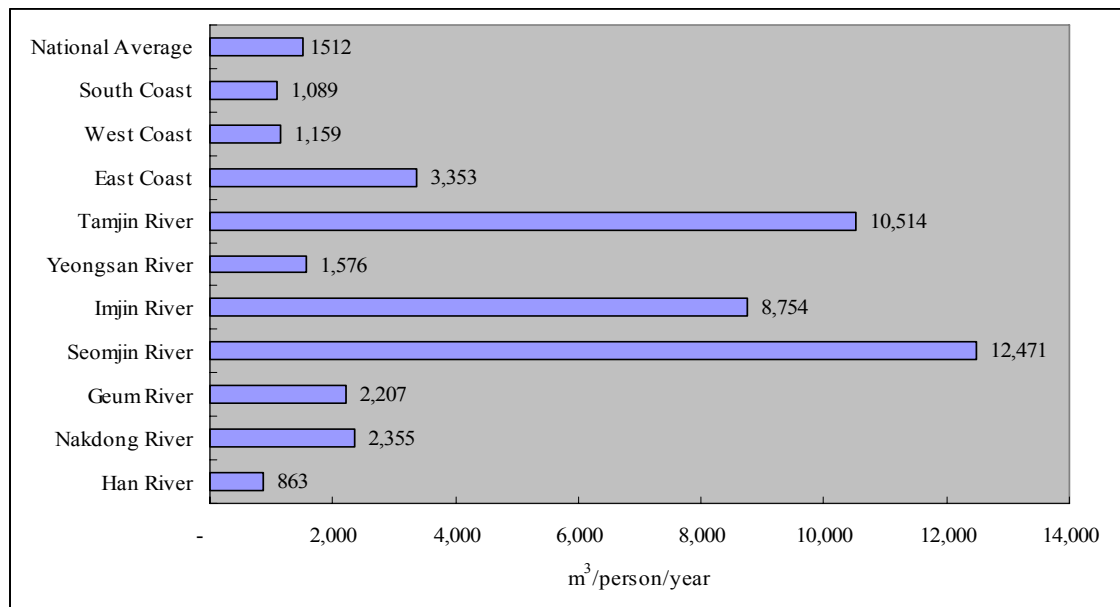
Figure 13 Utilisation of Water Resources in Korea as of 2007



Source: MLTM (2010, p.18)

As shown in Figure 14, the Han River basin accommodating the National Capital Region is recorded as one of the most distressed regions, which has 863m³ of renewable fresh water per person per year (Ministry of Construction and Transportation, 2006, p.11). In contrast, Seomjin River basin has a much higher quantity of fresh water of 12,471m³ per year per person (Ministry of Construction and Transportation, 2006, p.11).

Figure 14 Variation of Renewable Fresh Water between River Basins



Source: The Ministry of Construction and Transportation (2006, p.12)

5.2.3 Influence of Physical Conditions

5.2.3.1 General Implication of Physical Conditions

As Sabatier (1993, pp.20-21) states, the basic attributes of goods and the basic distribution of natural resources confine the range of feasible alternatives. The physical characteristics of water and the water industry limit the feasibility of competition in the market (Littlechild, 1986, p.5, Cowan, 1997, p.83, Ogden and Anderson, 1995, p.536). Balance and Taylor (2005, pp.9-19) point out that the physical nature of the water supply process such as higher sunk costs and transport costs than gas and electricity, and non-homogeneity of water quality constrains competition in the market. By comparing the differences of resource and transport costs between water, gas and electricity industries, they argue that the costs of the water industry are much higher than those of the other industries. According to Rowson's work (2000, pp.10-11), the weight of supply and production activities which can be assumed as competitive parts of the water and wastewater industry is only 20 per cent of total expenditure. In contrast, the weight in gas and electricity industries is estimated approximately 60 per cent.

Another feature of water hampering market competition is an environmental concern. A water quality control for common carriage is not a matter of hydraulic feasibility, but a matter of accountability (Balance and Taylor, 2005, p.16). This is because, even though the probability of the water quality problem is low, it is difficult to identify the source of the problem and the extent of responsibility. Accordingly, the direct competition instruments introduced in the UK water industry, namely inset appointment⁵³, common carriage⁵⁴ and cross-border competition⁵⁵, have been slow to take effect: (Parker, 2004, pp.12-13, Crowther et al., 2006, pp.180-181, Wills-Johnson et al., 2003, p.101).

⁵³ A inset appointment means that 'one water company replaces the incumbent as the appointed water and/or sewerage company for a specific area'(OFWAT, 2005a). However, inset appointments are allowed in only three circumstances: areas using not less than 50,000 cubic meters of water, areas not served by an incumbent company, areas where the incumbent company consents to transfer (OFWAT, 2005a).

⁵⁴ Common carriage refers to the shared use of a pipe network, treatment works or storage capacity, when a company supplies water or sewerage service to its customers by using another company's network (OFWAT, 1999).

⁵⁵ Cross-border competition is a more direct method of competition than inset appointment because any customer can choose another company's network and receive a supply, as long as they are willing to pay the cost of making the connection (OFWAT, 2000).

5.2.3.2 Influence on Water Resources Management

Seasonal and annual variation of precipitation causes South Korea to suffer from cyclical drought and flooding. In addition, swift industrialisation and urbanisation have worsened water supply and flood control due to the high concentration of the population in small areas, which requires new water resources with new water supply networks, and makes the areas vulnerable to flooding. In the industrialisation era, the Korean government chose dam construction as a prime policy. Accordingly, South Korea has 15 multi-purpose dams, 16 water supply dams, 7 irrigation dams, 10 hydro-electric dams, 17,753 irrigation reservoirs, and 5 estuary dams, as shown in Table 2. The multi-purpose dams have been especially established for urban and industrial water supply and controlling flooding. 15 multi-purpose dams supply 10.8 billion m³ of water per year which is 32 per cent of total water supply (33.7 billion m³) (Ministry of Construction and Transportation, 2006, p.21). The multi-purpose dams contribute to flood control by 3 billion m³ per year on average.

Table 2 Dams in Korea

Classification	No. of Dams	Total water storage	Available ⁵⁶ water storage	Flood control	(Unit: mil. m ³)
					Water supply (mil. m ³ /year)
Total	17,806	18,402	13,194	2,778	17,663
Multi-purpose Dam	15	12,389	8,654	2,460	10,756
Hydro-electric dam	10	1,9340	888	276	1,315
Water supply dam	16	497	431	23	629
Irrigation dam	7	713	527	19	532
Irrigation reservoir	17,753	2,245	2,245		2,245
Estuary dams	5	618	449		2,186

Source: The Ministry of Construction and Transportation (2006, pp.63-65)

5.2.3.3 Influence on Water and Wastewater Service System

The topographical characteristics of South Korea lead to regional differences of water resources and available land. The regional variation of water legitimised the introduction of multi-regional water supply systems which carry raw water and/or

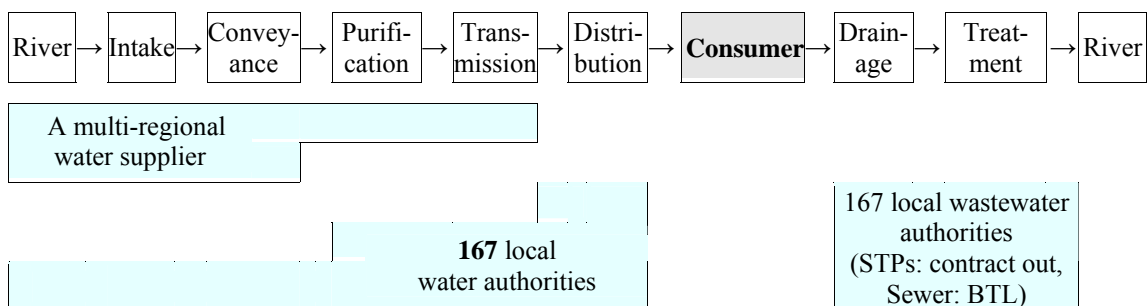
⁵⁶ Available water storage of a reservoir is the available amount of water in a planned dry year, which is usually to meet water demand for ten year drought frequency.

purified water from regions having enough water resources to regions demanding them. Since the First Sudogweon Multi-regional Water Supply System was established for the National Capital Region in the 1970s, 23 systems have been constructed. The systems take charge of 47.2 per cent of total industrial and potable water supply in terms of the capacities of water supply systems as of 2003 (Ministry of Construction and Transportation, 2006, p.22). The systems provide water to 98 out of 167 municipalities.

5.2.3.4 Influence on the Structure of the Water Industry

The ‘physical context’ (Hecllo, 1974, p.18) shapes the basic structure of the Korean water industry. The seasonal and regional variation of water resources led to the establishment of a state invested corporation, the Korea Water Resources Corporation (Kwater), which is in charge of multi-regional water supply systems and multi-purpose dams. The 167 local governments⁵⁷ have their own local water supply systems. As a result, the water supply sector in South Korea comprises 167 public, regional monopolies and a public multi-regional water supplier as shown in Figure 15. Sewerage systems have been developed by and within municipalities. The 167 local governments are legal sewerage service providers, even though 42 per cent of wastewater treatment plants are contracted out to private companies as of 2003 (KEI, 2005, p.26) and BTL⁵⁸ projects were introduced for new sewer networks. However, consumers cannot choose sewerage service providers. Competition in the market does not exist in the Korean water and wastewater industry. This fragmented industrial structure has provoked a debate on economies of scale in the industry.

Figure 15 The structure of the Korean Water Industry



Source: Lee et al. (2004b, p.27)

⁵⁷ The Jeju Province integrated four local water and wastewater authorities in 2007-2008. Thus, as of 2009, the 164 local governments provide water and wastewater service.

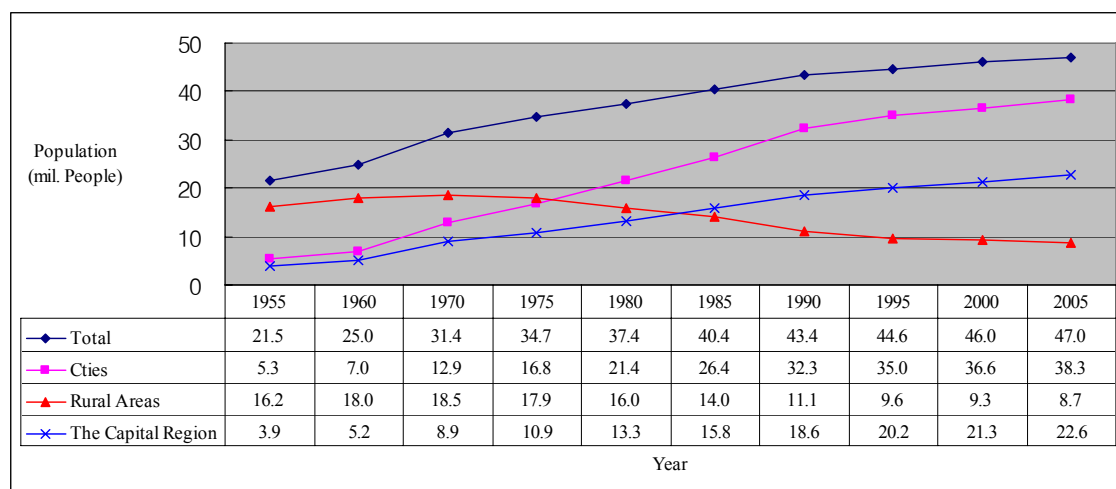
⁵⁸ Build-Transfer-Lease

5.3 Socioeconomic Context and the Water Industry

5.3.1 The Population and its Movement

The population of South Korea is 48,991,779 and its population density is 497.8 persons for each square kilometre as of 2006 (Korea National Statistical Office, 2006c). In contrast, the population of North Korea is estimated as 23,079,471 persons as of 2006 based on 1993 census of North Korea, though North Korea has a larger land area than South Korea (Korea National Statistical Office, 2007a). As shown in Figure 16, the population of South Korea increased considerably from 21,502,386 in 1955 to 47,041,434 persons in 2005 by 1.98 per cent per year (Korea National Statistical Office, 2006c). With the increase of population, movement of the population from rural areas to urban areas is noticeable. Residents in cities have increased from 24.5 per cent in 1955 to 81.5 per cent of the population in 2005.

Figure 16 Movement of the Population in Korea

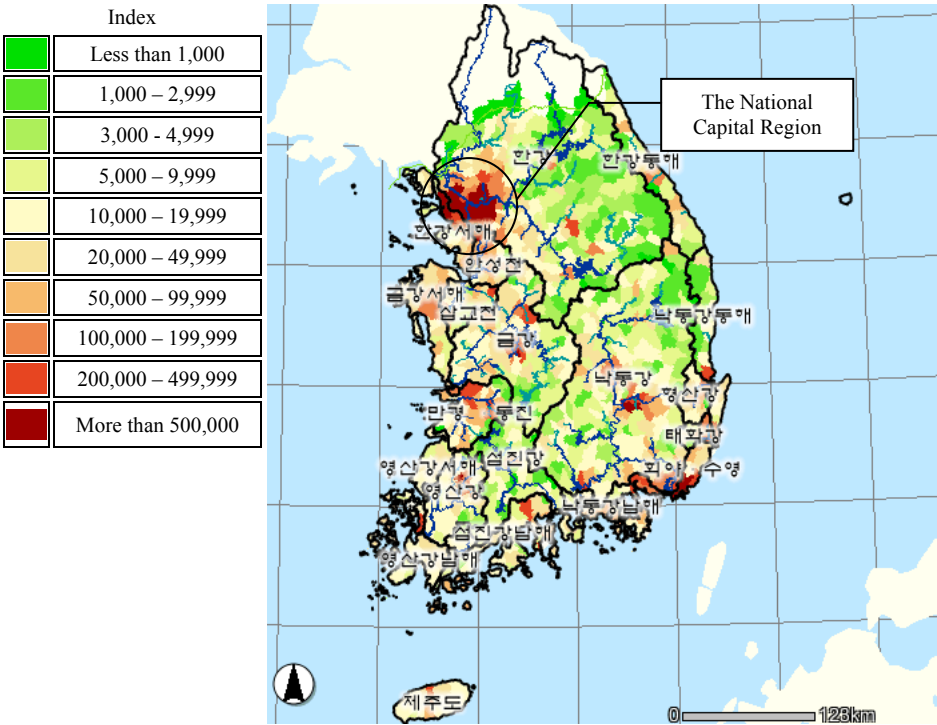


Note: a city is a municipality which has the population of more than 50,000 and the characteristics of cities.
Source: The Korea National Statistical Office (2006b)

Figure 17 shows a significant concentration of the population in the National Capital Region. More than 48 per cent of the population live in the region which has only 11.8 per cent of the land of the country. Industrialisation and urbanisation have led considerably to population movement in Korea (Choi, 1998, p.480). Cities which provide better economic and societal opportunities, such as income and education, have attracted more people (Park, 2006a, pp.30-31, Kim and Jang, 1997, pp.193-194). In turn,

the population movement does not simply mean the increase or decrease of the population, but changes in the societal and economic structure of origin and destination areas. The concentration of the population in the National Capital Region in Korea reflects the economic gap between regions as well as the deepening of the gap (Park, 2006a, p.3). Accordingly, infrastructures including water and wastewater service systems have been intensively constructed to support the expansion of the capital region, cities and industrial areas.

Figure 17 A Map of the Distribution of the Korean Population as of 2000



Source: The Ministry of Construction and Transportation (2003)

5.3.2 Transition of Economy and Industry

From the economic perspective, South Korea has developed rapidly since the 1960s. Its nominal GDP in 1955 was 1.4 billion US dollars, but with growth of 6.78 per cent per year, it becomes 887.4 billion dollars as of 2006, as shown in Table 3. The nominal GNP per capita of South Korea has grown from 65 to 18,372 dollars over about 50 years. Accordingly, South Korea has developed into the thirteenth largest economy in terms of GDP (World Bank, 2007). The dependency of the Korean economy on international economies has increased considerably. Its export rate of GNI has increased

from 2.9 per cent to 44.8 per cent, while the import rate has grown from 10 per cent to 44.8 per cent (Bank of Korea, 2007d).

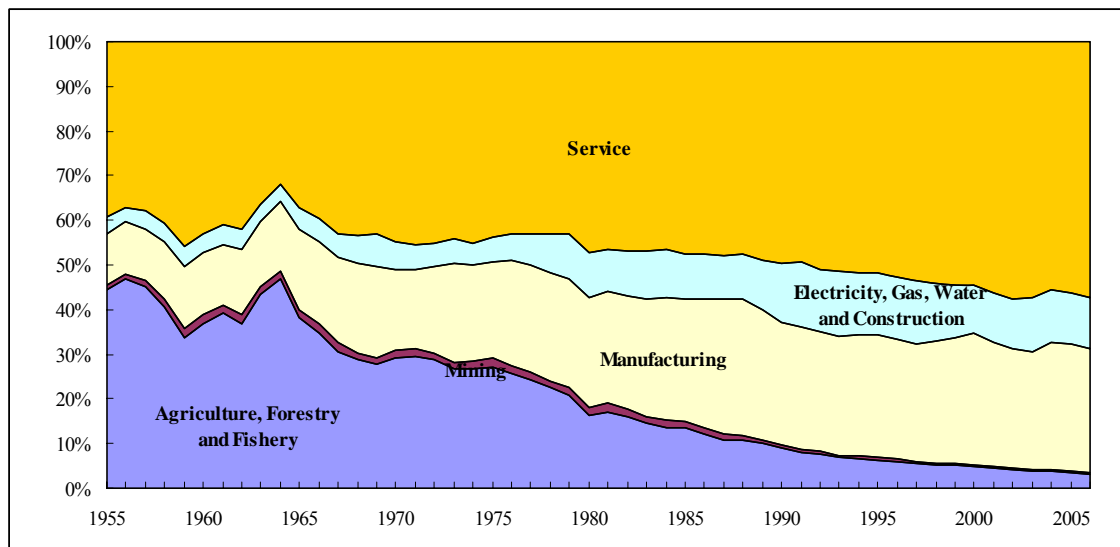
Table 3 GDP and GNP per capita between 1955 and 2006 in Korea

	1955	1960	1970	1980	1990	2000	2006
Nominal GDP (billion USD)	1.4	2.0	8.1	63.8	263.7	511.8	887.4
Nominal GNP per capita (USD)	65	79	254	1,645	6,147	10,841	18,372

Source: Bank of Korea (2007c)

With the growth of economic scale, South Korea has experienced substantial changes of industrial structure. Agriculture, forestry and fishery were the prime industries of South Korea until the 1960s, but the weight of these industries decreased significantly from 44.5 to 3.4 per cent of GDP between 1955 and 2006, as shown in Figure 18.

Figure 18 Movement of the Industrial Weight in Korea from 1955 to 2005



Source: Bank of Korea (2007c)

In contrast, manufacturing industry which was only 11.6 per cent of GDP in 1955, reached the peak of 30.7 per cent in 1988 and slowly declined to 27.8 per cent of the 2006 GDP. Manufacturing industry is characterised by the growth of heavy and chemical industries. The industries shared only 28.6 per cent of the production of the manufacturing industry in 1962 when a centralised economic development policy, the First Five Year Economic Development Plan, started (Bae, 2003, pp.39-41). However,

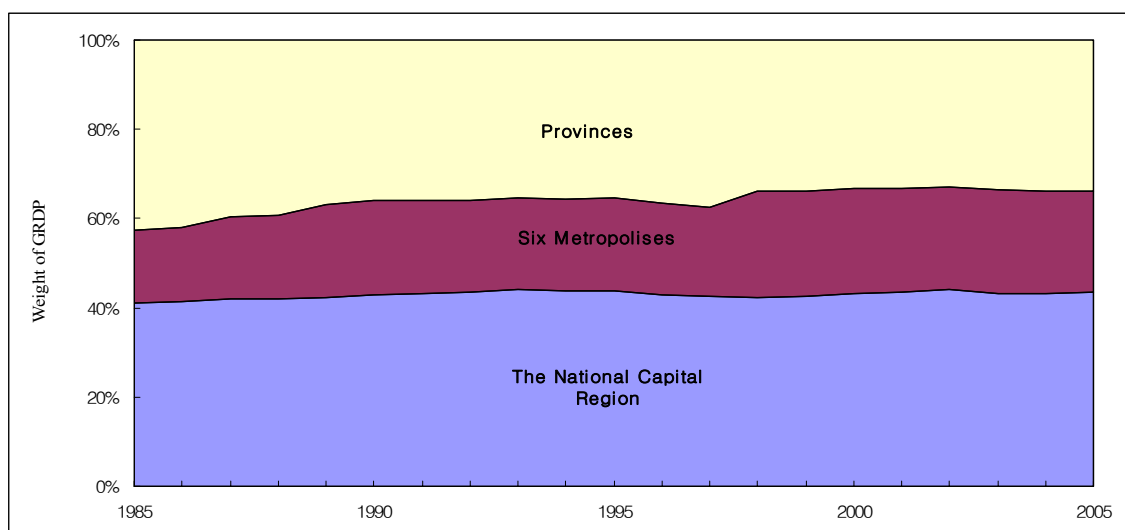
they were weighted as 75.4 per cent of the production in 1997 (Bae, 2003, pp.39-41). Service industry has replaced agriculture, forestry and fishing industries. This forms 56.3 per cent of the Korean GDP as of 2006. The weight of electricity, gas and water industries taking 2.4 per cent of the 2006 GDP have increased 1.64 times between 1970 and 2006. The construction industry which rose from 5.1 in 1970 to 9.1 per cent of the GDP in 2006, has become an important industry.

5.3.3 Increasing Disparity between Regions

5.3.3.1 Disparity of the Population and Gross Regional Domestic Product

South Korea has experienced the movement of economy and population from rural areas to urban areas following the general pattern of industrialisation and urbanisation (Park, 2006a, pp.7-8). However, a more distinctive feature is the concentration of economic resources and population in the National Capital Region (Park, 2006a, p.3, Kim, 2005, pp.387-389, Kwon, 2005, p.571). As shown in Figure 16 and Figure 17, the residents of the National Capital Region are more than 48 per cent of the Korean population, though they were only 18 per cent in 1955. Figure 19 shows that the National Capital Region has kept between 41 and 43 per cent of the GDP since 1985, when gross regional domestic product (GRDP) started to be calculated.

Figure 19 Transition of Gross Regional Domestic Product



Source: Korea National Statistical Office (2007b)

According to Kim's investigation (2005, pp.3-4), 95 per cent of the top 100 Korean companies placed their headquarters in the region as of 2000. Electronics and communication industries, which are considered future industries, concentrated in the National Capital Region as much as 88.9 per cent and 97.8 per cent of the production of each industry respectively. Moreover, 85 per cent of the government offices, 46.3 per cent of medical service organisation, and 51.5 per cent of cultural institutions were located in the region. In contrast, population in rural areas accounts for only 18.5 per cent of the population as of 2005 which decreased from 76.7 per cent in 1955. In the same vein, the gross regional domestic product (GRDP) of provinces⁵⁹ reduced from 43 per cent to 34 per cent of the GDP between 1985 and 2005.

5.3.3.2 Transition of the Working Population Structure

Choi (1998, p480) describes this phenomenon as the subordinate development of rural economy to urban economy. With the rapid outflow of rural population, the change of population structure in the rural areas explains this phenomenon. Even in rural areas, as shown in Table 4, the working population in the primary industry has declined from 78 per cent in 1975 to 42 per cent in 1995.

Table 4 The Structure of the Working Population in Rural Areas in Korea
Unit: person

	1975 ¹⁾		2005 ¹⁾	
Total Working Population	7,532,766	100%	4,212,295	100%
Agriculture etc.	5,840,486	78%	1,785,417	42%
Mining	80,823	1%	9,544	0%
Manufacturing	464,781	6%	656,356	16%
Electricity etc.	103,429	1%	237,885	6%
Services	1,043,192	14%	1,519,631	36%
Unknown	55	0%	3,462	0%

Note: 1) Five per cent of the population was surveyed in 1975, and ten per cent in 2005.

2) Agriculture etc. includes agriculture, forestry, hunting and fishing.

3) Electricity etc. includes electricity, gas, water and construction.

Source: Korea National Statistical Office (2006b)

⁵⁹ A province consists of cities which have less than 1 million people and rural areas.

The population working in the manufacturing and the service industries rose significantly by 41 and 45 per cent respectively during the same period, even though the total working population has fallen by 44 per cent. That is, the main industry of rural area has changed from the primary industry to the secondary and tertiary industries. Consequently, economic development in the rural areas has been increasingly dependent on urban industries, but agriculture, forestry, hunting and fishing have contributed less to the local economy.

5.3.3.3 Change of the Regional Institutional Structure

With disparities of the population and the GRDP between regions, the change of regional industrial structure has taken different paths. As shown in Table 5, the National Capital Region has experienced the increase of manufacturing and services, but the decrease of the primary industry, utilities and construction in terms of weight of the GDP between 1985 and 2005.

Table 5 The Structure of Gross Regional Domestic Product

Unit: KRW billion⁶⁰

	Total				The National Capital Region			
	1985		2005		1985		2005	
	Prices ²⁾	Weight	Prices	Weight	Price	Weight	Prices	Weight
GRDP	200,387	100.0%	730,121	100.0%	82,422	100.0%	316,999	100.0%
Agriculture etc. ²⁾	20,108	10.0%	23,704	3.2%	3,079	3.7%	3,094	1.0%
Mining	1,584	0.8%	1,267	0.2%	269	0.3%	202	0.1%
Manufacturing	49,512	24.7%	202,551	27.7%	18,194	22.1%	73,842	23.3%
Electricity etc. ³⁾	17,755	8.9%	72,010	9.9%	8,460	10.3%	26,163	8.3%
Services	111,428	55.6%	430,590	59.0%	52,421	63.6%	213,697	67.4%
	Six Metropolises				Other Regions			
	1985		2005		1985		2005	
	Prices	Weight	Prices	Weight	Prices	Weight	Prices	Weight
GRDP	32,504	100.0%	165,325	100.0%	85,462	100.0%	247,798	100.0%
Agriculture etc. ²⁾	980	3.0%	1,282	0.8%	16,049	18.8%	19,328	7.8%
Mining	69	0.2%	109	0.1%	1,247	1.5%	955	0.4%
Manufacturing	10,829	33.3%	46,527	28.1%	20,489	24.0%	82,182	33.2%
Electricity etc. ³⁾	2,784	8.6%	15,425	9.3%	6,511	7.6%	30,422	12.3%
Services	17,841	54.9%	101,982	61.7%	41,166	48.2%	114,911	46.4%

Note: 1) The prices applied for this table are real prices at 2000.

2) Agriculture etc. includes agriculture, forestry and fishing.

3) Electricity etc. includes electricity, gas, water supply and construction.

Source: Korea National Statistical Office (2007b)

⁶⁰ The closing exchange rate of December 2000 was KRW 1,880.86 per GBP.

On the other hand, provinces experienced the decrease of the primary and tertiary industries, but the increase of manufacturing, utilities and construction during the same period. The primary industry has only grown 1.18 times, while manufacturing and services have been boosted 3.09 and 3.86 times respectively between 1985 and 2005.

5.3.3.4 Rapid Growth of the Aged Population in Rural Areas

The age structure of rural areas is distinctive, even though urban and rural areas have commonly experienced the aging phenomenon as shown in Table 6. Until 1975, the urban and rural areas had demonstrated a similar level of aging, but the 2005 census illustrates significant difference of the age structure between urban and rural areas. In the case of Myeons⁶¹, which usually consist of agricultural and fishing villages, the aging index reaches 174 as of 2005, which is 4.7 times more than that of cities.

Table 6 Change of Age structure in Korea

	1975			2005		
	Nation	Cities	Rural areas	Nation	Cities	Rural areas
Total	34,678,972	16,769,946	17,905,538	47,041,434	38,337,699	8,703,735
0-14 Years old	13,208,388	5,900,674	7,307,709	8,986,128	7,490,714	1,495,414
15-64 Years old	20,263,979	10,487,169	9,773,392	33,690,088	28,100,152	5,589,936
65 Years old & over	1,206,599	382,097	824,437	4,365,218	2,746,833	1,618,385
Aging Index ¹⁾	9.14	6.48	11.28	48.58	36.67	108.22

Note: 1) The formula of Aging Index is 'persons over 65 years old / persons under 14 years old x 10'.
Source: Korea National Statistical Office (2006b)

5.3.4 Influence of Socioeconomic Context

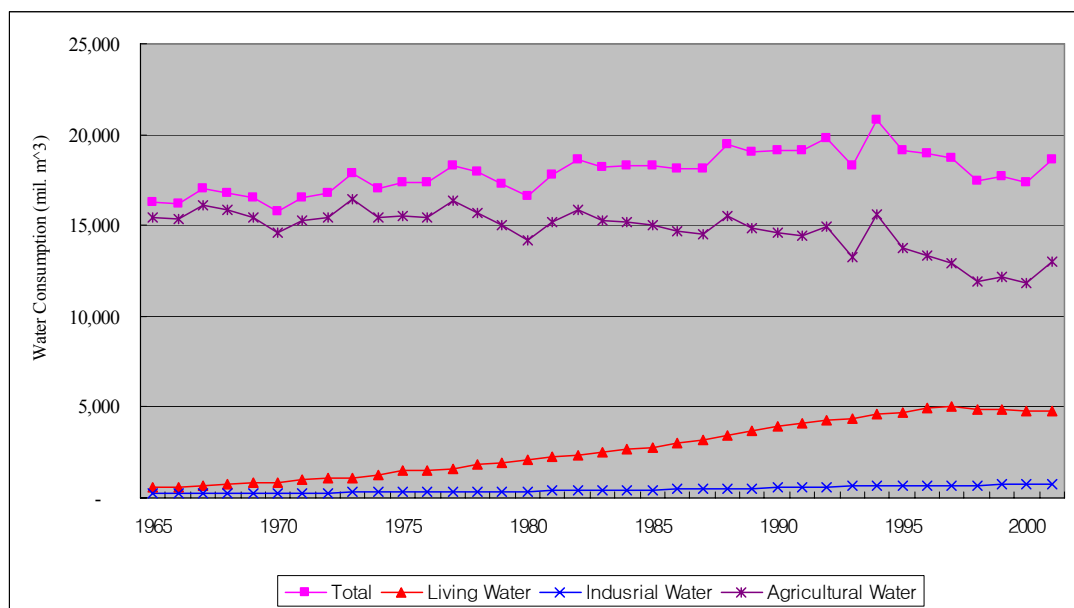
5.3.4.1 Transition of Water Demand

Increasing population and industrialisation have affected the pattern and amount of water consumption. Living water consumption rose rapidly by 8.46 times between 1965 and 2001 in the five largest river basins in South Korea as shown in Figure 20, while the

⁶¹ A Myeon is a township which is a subdivision of a Gun (county) which consists of Myeons and Eups.

population has expanded by 1.6 times during the same period (Korea National Statistical Office, 2006b). The reason why the demand for living water has grown more swiftly than the population seems to be the change of life style. The changing structure of industries has shaped the structure of water consumption. Though agricultural water represents more than 70 per cent of water consumption as of 2001, the weight has continuously decreased from 95 per cent in 1965⁶². In contrast, the consumption of industrial water in 2001 was 8.5 times higher than that in 1965. However, water consumption has stabilised since 1997.

Figure 20 Water Consumption in the Five Large River Basins



Source: The Ministry of Construction and Transportation (2003)

This stabilising trend of water demand is reflected in the National Water Resources Plan (2006-2020) by the Ministry of Construction and Transportation. The plan anticipates that water demand in total will increase by 0.25 per cent per year between 2006 and 2020 as shown in Table 7. The stabilisation of water demand is one of the main drivers of the policy change of the Korean water sector. Policies of water resources management are modified from the development of new water resources to water demand control.

⁶² Water Management Information System of the ME, a database employed, does not include river maintenance flow in the water consumption in the five large river basins. Thus, the statistics reflects only water consumption by human. The National Water Resources Plan (Ministry of Construction and Transportation, 2006, p.81) estimates that the demand of agricultural water share 46.5 per cent of total water demand in 2006 by including river maintenance flow.

Table 7 An Estimation of Water Demand (2006-2020)

	Unit: mil. m ³ /year			
	2006	2011	2016	2020
Total Demand	34,378	35,498	35,800	35,568
Living Water	7,877	8,103	8,180	8,195
Industrial Water	2,787	3,178	3,562	3,422
Agricultural Water	15,977	15,849	15,690	15,583
River Maintenance Flow	7,737	8,368	8,368	8,368

Source: The Ministry of Construction and Transportation (2006, p.81)

5.3.4.2 Regional Disproportion of Water Supply and Prices

Concentration of economies and population on metropolises and cities has inevitably led to imbalanced investment of infrastructure. Table 8 shows that more than 97 per cent of the urban population is supplied with tap water while only 56.9 per cent of the rural population is provided with it as of the end of 2005. Myeons, where 57.2 per cent of the population engage in agriculture, record a water supply rate of only 37.7 per cent.

Table 8 Regional Difference of Water Supply

	Unit: 1,000 persons				
	Population	Water Supplied Population	Supplied Rate (%)	Water Supply a Day (1,000 m ³)	Water Supply per Person a Day (ℓ)
Whole Country	49,268	44,671	90.7	16,211	363
Metropolises ¹⁾	23,079	22,832	98.9	8,025	351
Cities (Sis)	17,061	16,641	97.5	6,257	376
Rural Areas (Guns)	9,128	5,198	56.9	1,929	371
- Eups	3,909	3,231	82.6	1,222	378
- Myeons	5,219	1,967	37.7	707	359

Note: 1) Metropolises include the Capital, Seoul, and Six metropolises, but exclude other areas of the National Capital Region.

Source: The Ministry of Environment (ME, 2006b, p.1)

In addition, rural areas are most likely to suffer from higher water production costs and prices than metropolises and cities, as shown in Table 9. For instance, the water production costs of Pyeonchang-gun and Jeongseon-gun, the highest areas, are KRW 2,729 (GBP 1.56 at the closing rate of December 2005) and KRW 2,317 (GBP 1.33) per

m³ respectively, while those of Gumi-si and Paju-si, the lowest areas, are KRW 399 (GBP 0.23) and KRW 435.4 (GBP 0.25) per m³ respectively. Accordingly, rural areas cannot fully cover the production costs with the water prices. The price rationalisation rate of rural areas only reaches 59.4 per cent, whereas those of metropolises and cities are 92.7 and 80.4 per cent respectively. In other words, the local governments in rural areas should subsidise their water businesses more than those in urban areas in spite of their lack of budget.

Table 9 Regional Disparity of Water Costs and Prices

	Total Production (1,000m ³)	Accounted Production (1,000m ³)	Accounted Amount (mil. Won)	Accounted Water Rate (%)	Water Price (Won/m ³)	Production Cost (Won/ m ³)	Price/Cost Ratio (%)
Whole Country	6,001,770	4,761,307	2,681,523	79.3	563.2	680.0	82.8
Metropolises	2,931,738	2,455,254	1,310,366	83.7	533.7	575.7	92.7
Cities (Sis)	2,698,151	2,075,948	1,212,034	76.9	583.8	726.3	80.4
Rural Areas ¹⁾	377,881	230,105	159,123	61.0	691.5	1,163.9	59.4

Note: Rural areas are Guns which are composed of Eups and Myeons.

Source: The Ministry of Environment (ME, 2006b)

Regional disparity of water supply services and water production costs and prices provoke social concerns in the Korean water sector. This is because deterioration of underground water quality in rural areas becomes severe and residents in rural areas are more economically vulnerable. These disparities make the central government set an expansion of water supply into rural areas as a prime policy for the water sector. However, new investment causes the substantial rise in the price of water even though the central government subsidises the new investment.

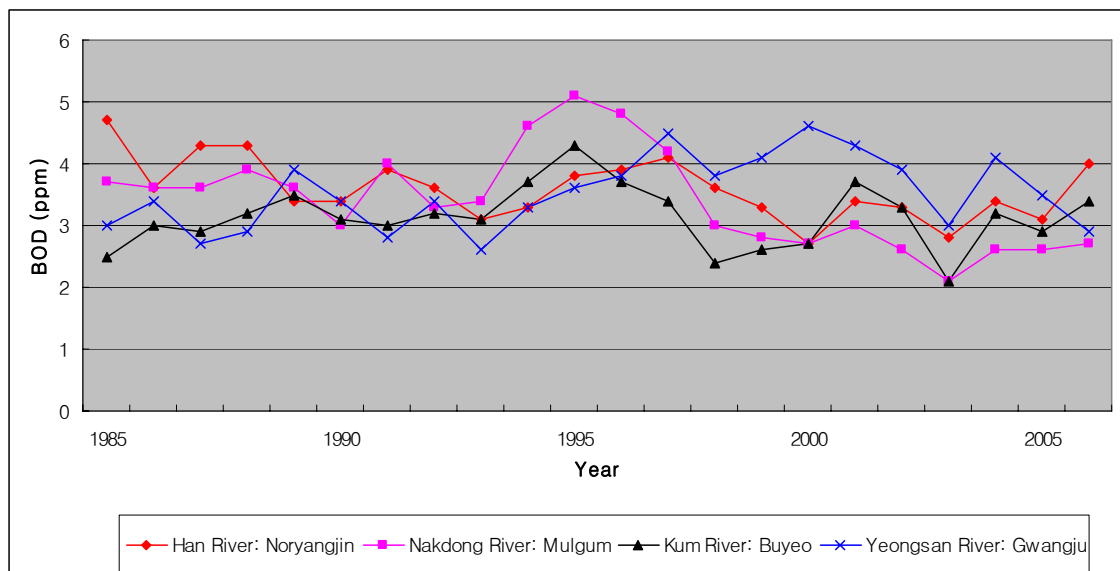
5.4 Environmental Context and Water Resources Management

5.4.1 Transition of Water Quality

5.4.1.1 Change of River Water Quality

Degradation of river water quality has considerably impacted on policies for water resources and the water industry in Korea. In terms of biochemical oxygen demand⁶³, the water pollution of the Han River at Noryangjin reached a peak of 8.3ppm in 1978 which comes under the fourth grade of river water quality (Koo, 1996, p.77). That is, the water quality in 1978 was inappropriate for drinking water resources, though it could be used as industrial water resources. Figure 21 shows that the water quality of the four largest rivers in Korea has improved and kept between 3 and 5 ppm of biochemical oxygen demand since the second half of the 1980s. Those are correspondent to the second and third grade of river water quality.

Figure 21 Water Quality of the Four Largest Rivers in Korea



Source: Korea National Statistical Office. (2007c)

5.4.1.2 Contamination Cases of Potable Water

Even if river water quality has been improved, the contamination events of potable water have not declined. Table 10 shows that excessive events of drinking water standard at water treatment plants and taps continue and spring water contamination events rose significantly between 1999 and 2003. This trend indicates the vulnerability of water supply in rural areas which heavily depends on simple purification systems or spring water. In addition, major drinking water contamination events, such as heavy

⁶³ Biochemical oxygen demand indicates how fast biological organisms consume oxygen in water. A low biochemical oxygen demand is an indicator of good quality water, while a high biochemical oxygen demand indicates polluted water.

metal contamination in potable water in 1989, trihalomethane contamination event, so called THM event, in drinking water in 1990, and phenol pollution disaster in the Nakdong River in 1991, have led to the policy change of the water resources management and the water industry in Korea.

Table 10 The Inspection Results of Drinking Water Quality in Korea

Facilities	1999			2002		
	Inspected Facilities	Facilities exceeding Standards		Inspected Facilities	Facilities exceeding Standards	
water treatment plants	1,156	15	1.30%	1,088	7	0.64%
Taps	3,572	39	1.09%	3,639	16	0.44%
Simple Purifiers	598	72	12.04%	607	30	4.94%
Springs	6,904	887	12.85%	6,945	1,024	14.74%
Facilities	2003			2004		
	Inspected Facilities	Facilities exceeding Standards		Inspected Facilities	Facilities exceeding Standards	
water treatment plants	1,079	13	1.20%	1,062	10	0.94%
Taps	3,680	24	0.65%	3,652	20	0.55%
Simple Purifiers	622	42	6.75%	628	40	6.37%
Springs	6,903	1,156	16.75%	10,472	2,421	23.12%

Source: Korea National Statistical Office (2007d)

5.4.2 Influence of Environmental Context

5.4.2.1 Formation of Environmental Movement

Environmental movements in Korea emerged in the second half of the 1980s and were disseminated through the 1990s. These movements have been triggered by major environmental contamination accidents rather than by an objective decrease in environmental quality. For instance, biochemical oxygen demand in Han River has been stabilised after recording 6.7 in 1984, while biochemical oxygen demand of the Nakdong River slightly increased after major water contamination accidents. Koo (1996, p.80) argues that the increase of objective environmental contamination did not necessarily have a direct impact on the environmental movements.

5.4.2.2 Distrust of Citizens in Potable Water

Consecutive water contamination accidents have resulted in citizens' distrust of drinking water. A survey carried out by the ME in 2003 says that only one per cent of respondents drink tap water directly (Kim, 2006). It continues that the rate of using home purifiers and drinking bottled water has grown from 18.7 per cent in 2000 to 44.0 per cent in 2003. Another survey by Young Men's Christian Association in 2005 explains that the reasons why citizens do not drink tap water are concerns about harmful substances (38 %), worry about bacteria infection (24%) and poor taste of water (17%) (Kim, 2006).

5.5 Concluding Remarks

This chapter does not intend to simply describe the general context of the Korean water industry, but attempts to explain the extent to which the context influences the industry. The physical conditions of the industry and the nature of water fundamentally determine the industrial features. The water industry is more monopolistic than other utility industries including gas, electricity and telecommunications. This characteristic of the industry makes 'exit' a less plausible alternative, but 'voice' a highly reliable choice. So the role of the regulator has been stressed to substitute and/or supplement direct competition in the market. To illustrate, OFWAT, the water regulator in England and Wales, has tried to increase competitive pressure in the English and Welsh water industry by adopting and utilising price-cap regulation and yardstick competition. In addition, the specific physical conditions of South Korea shape the structure of the Korean water industry. Seasonal variation of the water resources has prompted large dam construction, while regional difference of the resources has led to the establishment of multi-regional water supply systems.

Population growth, industrialisation and urbanisation have significantly affected the pattern and amount of water consumption. For instance, the demand for agricultural water has rapidly declined, while that of living water and industrial water has swiftly risen during a few decades. The concentration of population and economy on the National Capital Region is an especially distinctive feature of South Korea. More than 48 per cent of the population and more than 42 per cent of the Korean GDP are concentrated on the capital region. Accordingly, rural areas become more vulnerable in

terms of economic and age structure. Despite rural residents having less economic resources and mainly consisting of the elderly, they should pay more and have less service than urban residents having more economic resource. The stability of water demand is another challenge to the Korean water industry because the development of water resources has been based on the increasing water demand. The stable demand restructures the water resource management policy from the development of water resources to the demand control of water.

The water industry is directly related to the environment and human health. Thus, environmental degradation, especially deterioration of water quality, is crucial to the water industry. However, the water contamination events have more profoundly impacted on the policies of the water industry and the water resources management. For example, phenol contamination events in the Nakdong River led to the change of the governmental structure between ministries in the Korean central government. Consequently, the current governance structure of the Korean water sector is a result of interaction between context and related actors. The focus of the next chapter is on the state's response to the physical and socio-economic context in the Korean water sector.

Chapter 6 The State-led Economy and the Korean Water Industry

6.1 Introduction

Chapter Five shows that the basic features of the Korean water sector constrain the choice sets of actors. The regional imbalance of water resources requires the transportation of water over long distances, while seasonal imbalances force the Korean water sector to build large dams. The nature of water and the feasibility of technology make the water industry naturally monopolistic. Nonetheless, the analytical focus of this research is not on the influence of the basic features. Rather it focuses on temporal context and actors' responses to temporal context and events. This chapter details the governance formation of the Korean water industry under a developmental state between the 1960s and the 1980s.

Based on SDT and institutional processualism, this research perceives that the governance of the Korean water sector has progressed from monopolistic supply oriented governance to more participatory environmental and market oriented governance, although it is still far from being fully governed as a democratic water sector. Nevertheless, this research does not follow modernisation theories and transitional perspectives of democratisation. Lipset (1959, p.75), a leading modernisation theorist, argues that democratisation is preconditioned by economic development. That is, industrialisation, urbanisation and education accompanied by economic development bring democratisation. In contrast, transitional approaches explain democratisation with action. Rustow (1970, p.352), a transitional theorist, recognises 'national unity'⁶⁴ as only a contextual factor. He (1970, p.345) argues that democratisation is not a uniform process made by structural factors, but has diverse modes shaped by 'a wide variety of social conflicts and of political contents'. Rather, this research takes the position of institutional processualism, in which democratisation and economic development result from actions, events and context. This argument is in line with an institutional approach to democratic governance, which takes a middle position between modernisation theories and transitional perspectives (Kjaer, 2004, p.157). The institutional approach includes 'civil society', located between the state and

⁶⁴ Rustow (1970, p.350) defines 'national unity' as "the vast majority of citizens in a democracy-to-be must have no doubt or mental reservations as to which political community they belong to".

the private actors, that helps in 'bringing about a democratic transition' and increases the possibility of 'consolidating democracy'(Kjaer, 2004, p.159). Consequently, the networks and interactions between the state, firms and social actors under contextual constraints can explain the democratic development of both the Korean economy and the Korean water industry.

The Korean developmental state was not restricted to the role of only facilitating market functions. It also strategically distorted the allocation of resources for specific industries and regions. That is, the developmental path of Korea is contrary to many neo-liberalists' arguments, which attribute the success of the Korean economic development to Korea's choice of export-oriented industrialisation towards the international market rather than import-substitute industrialisation which protects national industries. This chapter shows that even if Korea had no comparative advantage in the industry on the world market, the developmental state chose heavy and chemical industrialisation (HCI) as Japan and Taiwan also did. The developmental and authoritarian government was the central actor which led to the rapid economic development of Korea. From Kooiman's mode of governance (2003, pp.23-24), this is hierarchical governance, while according to Jessop's term (1998, p.29), it is organisational hierarchy. Nonetheless, the developmental government cannot be a sole actor for economic growth. Moreover, this research postulates that dichotomies between the state and the market cannot properly explain modern economic development in line with a governance perspective (Jessop, 1998, pp.30-31, Rhodes, 1996, p.659, Kooiman, 2003, pp.3-4, Kooiman, 1999, p.79, Kjaer, 2004, p.132). It pays attention to 'self-organising networks' (Rhodes, 1996, p.658, Stoker, 1998, p.23) or 'interactions' (Kooiman, 2003, p.4) among the public, private, and social actors beyond dichotomies between the state and the market.

SDT sees that a governance structure dominated by a few elites inevitably results in (strategic) failure. Under the developmental and authoritarian state, economic and socio-political demands from the public were often suppressed and the decision making process was not open to the public. From the perspective of SDT, this research raises questions of why and how the developmental state could succeed in conventional economic development, while many developing countries are still suffering from a vicious circle of poverty. Kjaer (2004, pp.133-147), based on the proposition of developmental theorists including Johnson (1982) and Wade (1993), attributes the rapid

economic growth to informal networks inside and outside the government. She argues that internal networks among technocrats based on alumni relations from elite universities, had technocrats follow long term career paths rather than short-term opportunism. External networks between the government and firms through diverse mechanisms, including formal and informal meetings of the government and the firms, enhanced close coordination and cooperation. She suggests that leadership, the involvement of non-state actors, a coalition for growth, and less centralisation are conditions for economic development in less developed countries. However, the networks suggested by Kjaer and other developmental theorists are not comprehensive, but limited, so those cannot intrinsically accommodate diverse demands from society. This research recognises that Asian economies' relative openness and networking nature as compared to other developing countries might help in commencing economic development. Yet, beyond the constrained networks between political and economic elites, the public's compliance to and/or reaction against developmental policies would be the main cause of not only igniting economic development but also continuing it.

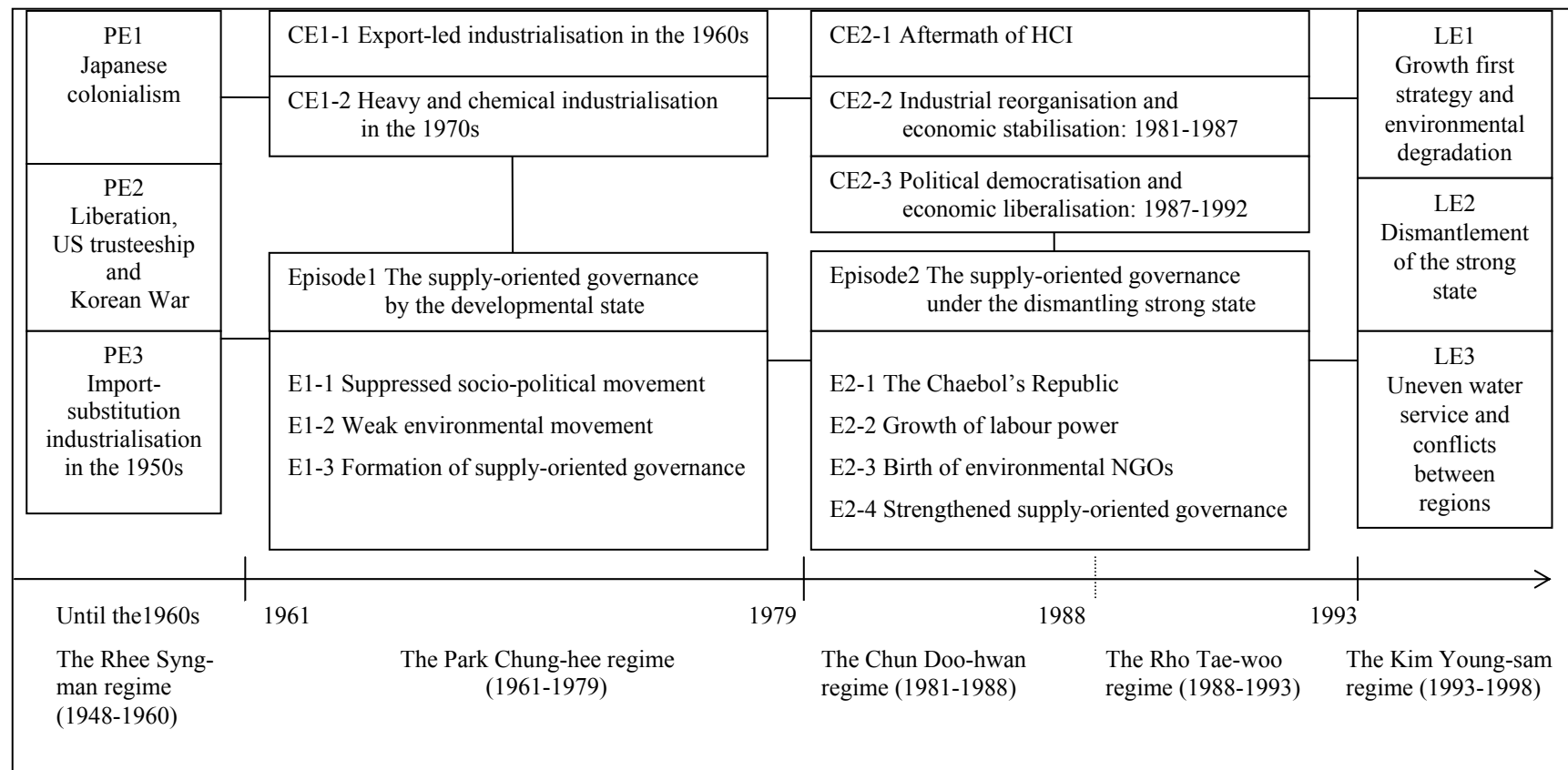
This developmental path of the Korean economy formed a supply-oriented governance of the water industry. This chapter tests how the supply-oriented governance was formed, why the water industry during the industrialisation period came to govern that way, and what were the results of the governance. Furthermore, it examines purposive incentives beyond simple material interests as another driver of human action, ways of actors' forming networks and degree of their participating in decision making. As Figure 22 shows, the development of the supply-oriented governance consists of two episodes: the supply-oriented governance by the developmental state (Episode 1) and the supply-oriented governance under the dismantling strong state (Episode 2). The formation of the supply-oriented governance was influenced by several prior events, such as Japanese colonialism (P.E.1), the liberation of Korea, the US trusteeship and the Korean War (P.E.2), and the import-substitution industrialisation in the 1950s (P.E.3). This is analysed in Section 6.3. Section 6.4 examines the establishment of the supply-oriented governance (Episode 1) which was led by export-led industrialisation in the 1960s (C.E.1-1) and HCI in the 1970s (C.E.1-2). Decision making based on the vested interests and short-sightedness of a few political and economic leaders intrinsically resulted in conspicuous failures, such as disproportionate regional development, the concentration of economic power and wealth in the hands of only a few large

conglomerates, called Chaebol, and environmental degradation. These are investigated in Subsection 6.4.6.

Concerning the strengthening of supply-oriented governance under the dismantling strong state (Episode 2), negative impacts of HCI including increasing financial risks and trade deficit, rising property prices and rampant inflation (C.E.2-1) made the Chun regime propel industrial reorganisation and economic stabilisation (C.E.2-2). The Chun regime and the following Rho regime were defeated in the 1985 and 1988 General Elections and faced strong resistance from the public and opposition parties. The Rho regime seized power in February 1988, choosing political democratisation and economic liberalisation (C.E.2-3). These contemporary events rendered power to both the Chaebol (E2-1) and social actors (E2-2 and E2-3). Consequently, the strong state was dismantled and the supply-oriented governance strengthened (E2-4). Section 6.5 analyses this process. The contemporary events and events in the episodes caused water quality degradation and environmental events (L.E.1), diversification of decision making centre (L.E.2) and uneven water services and under pricing (L.E.3). These later events were inputs for the environment-oriented governance. Thus, these will be analysed in Subsection 7.2.

Furthermore, this research addresses the reasons why actors try to participate in decision making. Rather than sticking to economic interests as postulated in main stream economics, this research suggests purposive incentives as the other main driver. Section 6.6 tests the degree to which this hypothesis works in the supply-oriented governance. SDT pays attention to the level of participation in decision making. Based on the participatory map developed in this research (see Subsection 2.3.2), Section 6.7 analyses the participatory level of the public in the process of forming the supply-oriented governance.

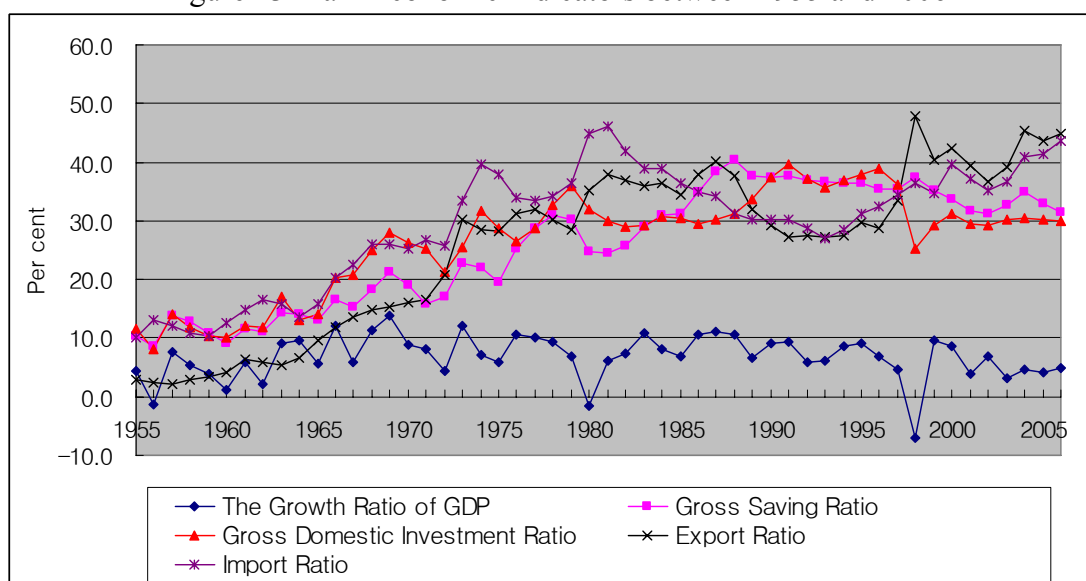
Figure 22 Analytical Structure of the Supply-oriented Case



6.2 The Miracle of the Han River

The economic development of South Korea was conspicuous, in terms of quantitative growth, and is referred to as ‘the miracle of the Han River’. Korea became a member of the OECD in 1996, even though it had been one of the poorest countries in the world until the 1950s. Figure 23 shows that the Korean economy achieved high average growth of 6.78% per year between 1955 and 2006 despite severe recessions around 1980 and 1997. GDP dramatically increased from USD 1.4 billion in 1955 to USD 887.4 billion in 2006, and current GNP per capita from USD 65 to UD\$ 18,357. The Korean economy has evolved into an outward-looking economy. Exports and imports shared just 2.95 and 11.50% of GNP during the second half of the 1950s respectively. However they soared up to 41.5 and 39.2% of the GNI in the first half of the 2000s as shown in Figure 23. Gross domestic investment manifestly increased from 10.98 to 29.9% of Gross National Disposable Income, and gross saving from 10.90 to 32.5%.

Figure 23 Main Economic Indicators between 1955 and 2006



- Note: 1. The growth ratio of GDP is calculated based on real price.
 2. Gross saving ratio and gross domestic investment ratio are calculated based on Gross National Disposable Income.
 3. Export and import ratios are the share of the exports and imports of total goods and services in GNP between 1955 and 1970, and the share of the total exports and imports in GNI between 1971 and 2006.

Source: Bank of Korea (2007d)

Table 11 The Stages of Korean Economic Development and their Features

Developmental Stages	Focused Industry	Policy Instruments	Industrial Weight	Economic Performance
The colonial period (1910-1945)	- A source of resources - A market for Japanese goods - Munitions industry	- A plan for increasing rice products (1920-1934) - Munitions Industrialisation (1931-1945) - Two-tier foreign exchange rate system favourable to US aid industries	- The 1 st industry: 43.1% of GDP as of 1939 - The 2 nd industry: 26.4% - The 3 rd industry: 30.4%	- Annual growth ratio of GDP from 1916 to 1939: 3.01%
Import-substitution industrialisation (1948-1961)	- Consumer goods: sugar, flour, and cotton textiles	- Protective trade policy: high tariffs, import quota and prohibition systems - Preferential interest rate to exporters	- The 1 st industry: 36.8% of GDP as of 1960 - The 2 nd industry: 20.0% - The 3 rd industry: 43.2%	- Annual growth ratio of GNP from 1955 to 1960: 3.53% - Nominal GDP as of 1960: USD 2 billion - Nominal GNP per capita as of 1960: USD 79
Export-led Industrialisation (The 1960s)	- Labour intensive industries: textiles, plywood, wigs	- Tax reduction including corporate taxes, and tariffs to exporters - Infrastructure provision to exporters - Preferential allocation of credits with low interest rates to Heavy and chemical industries	- The 1 st industry: 29.2% of GDP as of 1970 - The 2 nd industry: 26.1% - The 3 rd industry: 44.7%	- Annual growth ratio of the 1960s: 8.40% - Nominal GDP as of 1970: USD 8.1 billion - Nominal GNP per capita as of 1970: USD 254
Heavy and chemical Industrialisation (The 1970s)	- Heavy and chemical industries: Steel, nonferrous metals, machinery, electronics, chemicals	- Tax incentives: five-year tax holidays, investment tax credits etc. - Reduction of government expenditures - Tight control of monetary growth - Import liberalisation - Privatisation of commercial banks - Removal of selective incentive systems	- The 1 st industry: 16.2% of GDP as of 1980 - The 2 nd industry: 36.6% - The 3 rd industry: 47.3%	- Annual growth ratio of the 1970s: 7.24% - Nominal GDP as of 1980: USD 63.8 billion - Nominal GNP per capita as of 1980: USD 1,645
Stabilisation (1980-1986)	N/A	- Liberalisation of interest rates, capital flows and foreign exchange control - Liberalisation of establishment of financial organisations	- The 1 st industry: 8.9% of GDP as of 1990 - The 2 nd industry: 41.5% - The 3 rd industry: 49.5%	- Annual growth ratio of the 1980s: 8.72% - Nominal GDP as of 1990: USD 263.7 billion - Nominal GNP per capita as of 1990: USD 6,147
Liberalisation and Globalisation (1987-1997)	N/A	- Implementation of IMF standby agreements - Reformation of Industries (Big Deal) - Restructuring of financial organisations	- The 1 st industry: 4.9% of GDP as of 2000 - The 2 nd industry: 40.8% - The 3 rd industry: 54.4%	- Annual growth ratio of the 1990s: 6.08% - Nominal GDP as of 2000: USD 511.8 billion - Nominal GNP per capita as of 2000: USD 10,841
The IMF and Market-oriented Reformation	N/A		- The 1 st industry: 3.2% of GDP as of 2006 - The 2 nd industry: 39.6% - The 3 rd industry: 57.2%	- Annual growth ratio from 2001 to 2006: 4.63% - Nominal GDP as of 2006: USD 887.6 billion - Nominal GNP per capita as of 2006: USD 18,372

Source: Kim (2000, p.39, 2003b, pp.30/33), Choe (2005, pp.367-370, 2003, pp.159-160), Bank of Korea (2007c), Lee (2005c, p.398), and Kim, J. (1990a, pp.19-30)

The Korean economy between the 1960s and the early 1980s shows a typical case of the developmental state. The state intervened deeply in the process of Korean economic development. It has been a benchmarking model for developing countries. The economic successes of Asian countries, including Korea, Japan and Taiwan (see Subsection 3.2.1), have proposed a different economic development model from that of the western countries, which is based on market rationality. However, an economic crisis in 1997, the IMF crisis, cast doubt about the Asian model of economic development. The IMF crisis has been recognised as a sign of ‘government failure’ caused by the state-led economy. This research classifies the developmental path into six stages: (1) import-substitution industrialisation in the 1950s, (2) export-led industrialisation in the 1960s, (3) HCI in the 1970s, (4) economic stabilisation between 1980 and 1986, (5) liberalisation and globalisation between 1987 and 1997, and (6) the IMF crisis and market-oriented reformation from 1997 to the present. Table 11 briefly shows which industries and policy instruments were chosen and how industrial weight⁶⁵ and performance changed according to the transition of stages.

6.3 Prior Events

6.3.1 P.E.1: The Legacies of Japanese Colonialism

Korea was occupied by Japan in 1910. Before Japan’s colonisation, national merchandise and manual manufacturing had some potential to form domestic capital (Jung, 1987, p.12). However, they did not take root in the whole national economy, but confined themselves within urban trade. In addition, economic policies of Japan in the colonial period impeded the formation of domestic capital. They could not compete with foreign capital when the Korean market was forced to open to imperialistic countries. In the early colonial period from 1910 to 1919, Japan seized the Korean economy with economic policies such as the Land Investigation Order, Land Registration Order⁶⁶ and the Joseon Company Order⁶⁷ (Kim, 2002b, p.291, Jung, 1987,

⁶⁵ 1st industry is composed of agriculture, fishery and mining. 2nd industry consists of manufacturing, construction and utilities. 3rd industry refers to service industry.

⁶⁶ The Japanese government established the Joseon Government General to rule over colonised Korea. The Joseon Government General carried out land investigation and registration, one of the first colonial policies, which aimed to legitimise the land ownership of Japanese capital, to take over the Land of Joseon (the Korean dynasty before the colonialism) and to establish the basis of land taxes (Yun, 2006,

p.224). In this period, Korea played the role of a market for Japanese goods and a source of primary materials for the colonists.

After abolishing the Joseon Company Order in 1920, the establishment of national companies was facilitated. Therefore, the number of Korean companies increased from 15.5% of total companies in 1921 to 19.3% in 1929, but the share of the national companies still remained at the low level of 1.3% in the total corporate capital (Jung, 1987, p.226). During the Second Sino-Japanese War and the Pacific War between 1931 and 1945, Korea was used as a supply base for the wars. The Japanese government developed the war industry. The colonial period prevented Korea from accumulating domestic capital. As a result, 94% of industrial capital formed in Korea was owned by Japanese, but only 6% by Koreans as of 1940, as shown in Table 12.

Table 12 The Ownership of Secondary Industries in the Colonial Period

(As of 1940)

Classification	Korean Owned Companies		Japanese Owned Companies	
	Capital (KRW 1,000)	Weight (%)	Capital (KRW 1,000)	Weight (%)
Metalworking Industry	6,100	2	373,000	98
Machine Industry	61,500	42	85,050	58
Chemical Instrument Industry	1,000	0	276,250	100
Textile Manufacturing	14,000	15	76,600	85
Ceramic Industry	-	0	53,245	100
Wooden Manufacturing	5,500	10	47,000	90
Printing Industry	1,500	43	2,000	57
Grocery Industry	5,250	7	73,800	93
Gas and Electric Industry	-	0	553,030	100
Other Industry	7,000	8	83,500	92
Total	101,850	6	1,623,475	94

Note: The statistics only include companies which have more than KRW one million of capital.
Source: Choi (1971, p. 124, cited from Jung, 1987, p227)

6.3.2 P.E.2: The Liberation, the US Trusteeship and the Korean War

pp.44-45). The Land Investigation Order and Land Registration Order, enacted in 1912, were legal means to implement the land investigation and registration policy.

⁶⁷ The Joseon Company Order was established in 1911. The order was a company licence system applied only to companies established in Korea. A free company establishment policy was applied in Japan. The order intended to constrain the formation of domestic capital and to prevent international capital from investing in Korea (Son, 1984, pp.92-94).

Korea was finally liberated from Japan in 1945. However, the dependence of the Korean economy on Japan during the colonial period negatively impacted on the liberated Korean economy. The liberation of Korea resulted in a lack of skilled labour⁶⁸ and funds, and an abrupt decrease in foreign trade with Japan⁶⁹. Even though the foreign trade in 1948 was KRW 9,855 million, which rapidly increased from KRW 392 million in 1946 based on 1947 constant wholesale prices, it was only 1.8% of foreign trade of KRW 553,919 million in 1941 (Choe, 2005, p.352). Furthermore, the product of the manufacturing industry in 1946 was only 25% of the production of the manufacturing industry in 1939 when the production reached the highest point in the colonial period (Choe, 2005, p.352, Choe, 2003, p.153).

Soon after liberation, Korea was forcefully divided into South and North along the north latitude of 38 degrees. South Korea was under the control of the US military government while North Korea was under the USSR for three years. South Korea became independent and Rhee Syng-man came into power as the first president of South Korea in 1948. Yet the territorial division led to the Korean War in 1950 which lasted for three years. The war destroyed more than 40% of production facilities as shown in Table 13.

Table 13 The Industrial Damage by the Korean War as of 1951

	The amount of damage (thousand USD)				The rate of damage (%)	
	Buildings	Facilities	Materials/goods	Sum	Buildings	Facilities
Metal Industry	414	127	112	673	26	26
Machine Industry	407	106	280	793	35	35
Textile Industry	41,902	50,820	-	92,722	62	64
Chemical Industry	4,731	10,633	49	15,412	35	33
Ceramic Industry	1,429	215	0.2	1,644	25	40
Food Industry	1,216	378	0.1	1,954	30	20
Printing Industry	908	1,537	0.3	2,444	75	75
Total	51,600	63,815	441	115,262	44	42

Source: Korea Development Bank (1955)

⁶⁸ Korean skilled labourers were only 15 % of the total skilled labourers in the colonial period (Choi, 2004, p.3)

⁶⁹ To illustrate, trade between Korea and Japan formed 71 % of total foreign trade in 1920, 82 % in 1930, and 87 % in 1942 (Choi, 2005, p.352)

These socio-political and economic events preconditioned Korean economic development as the cases of Japan and Taiwan (refer to Subsection 3.2.2). The 36 year colonial period deprived Korea of its opportunity to form domestic capital and to build a self-sufficient economy. The liberation of Korea was achieved by foreign countries when the Second World War came to an end in 1945. This, however, led to the partition of Korea and ultimately resulted in the Korean War. These events destroyed the industrial foundation of Korea, trapping it in a vicious circle of poverty until the 1950s, whilst the Korean water sector remained in an underdeveloped state, recording a water supply rate of 20.9% in 1965, when water supply statistics started being collected.

6.3.3 P.E.3: The Import-substitution Industrialisation in the 1950s

The tragic history of the Japanese colonial period and the Korean War bequeathed desperate legacies to contemporary Korea. US aid played a crucial role in Korea's economic development, recording an average 15.9% of GNP during the 1950s and reached a peak of 22.9% of GNP in 1957 (Shin, 2003, p.47). The US government determined the size of the aid, the share of consumer and producer goods, and the items of goods, so the Korean government had few policy options (Kim, 1996b, p.97). In this context, the Rhee Syng-man regime chose import-substitution industrialisation (Choe, 2003, p.137, Choe, 2005, pp.356-360, Shin, 2003, pp.47-48).

To promote the import-substitution industrialisation, the Rhee regime adopted a two-tier foreign exchange rate system: 'Counterpart Fund Exchange Rates', determined by negotiation between the Korean and US governments, and 'market exchange rates', set in the private financial market. The Counterpart Fund Exchange Rate was basically applied to the US aid used by the government, while the exchange rates for the US aid consumed by the private sector were determined between the Counterpart Fund Exchange Rates and market exchange rates (Choe, 2005, pp.367-370). The official exchange rates were usually less than half of the market rates as shown in Table 14. Therefore, those who received US aid could enjoy economic rents.

Three white industries, namely, sugar, flour and cotton textiles, rapidly grew due to the economic rent provided by the government. As Choe (2003, pp.159-160) illustrates, the cotton textile industry, of which 66% was destroyed in the Korean War, was rapidly

rehabilitated. The production capacity of 1954 exceeded that of 1949, one year before the Korean War. This is because the government allocated the US aid of raw cotton based on the production capacity of companies, which led the companies to invest in the expansion of capacity. In addition, the Rhee regime implemented protective trade policies to promote the import-substitution industrialisation. However, the import-substitution industrialisation exposed serious limitations caused by a small market and economic dependence on US aid (Lee, 2005c, pp.380-381, Choe, 2005, pp.372/375, Kim, 2002b, pp.308-311). The Rhee regime could not overcome a vicious circle of poverty with the industrialisation policy (Choi, 2004, pp.318-319, Kim, 2002b, pp.318-319). With the economic failures, the regime's attempt to continue their power by the fraudulent presidential election in 1960 provoked a national resistance led by students, called the April Revolution, and finally resulted in the collapse of the regime.

Table 14 The Trend of Exchange Rates in the 1950s

(Whan to the USD)

	10/11/1951	15/12/1953	10/1/1954	15/8/1955	23/2/1960
Counterpart fund exchange rate (a)	60	180	350	500	650
Market exchange rate in the US market (b)	182	387	752	802	1,449
b/a (times)	3.03	2.15	2.15	1.60	2.23

Note: Whan is the previous Korean currency before using the current Korean currency, Won.

Source: Choe (2005, p.368)

6.4 Episode 1: The Supply-oriented Governance by the Developmental State

6.4.1 C.E.1-1: The Export-led Industrialisation in the 1960s

This socioeconomic context provided a basis for the Park Chung-hee regime (1961-1979), which came to power by military coup in 1961, to propel the export-led industrialisation in the 1960s. The regime changed the fundamental economic policy from an inward-looking economy to an outward-looking economy. However, it was far away from the neo-classical view of economic development. Economic development in the period of the Park government had been planned, incentivised and monitored by newly established governmental ministries: EPB, the Ministry of Finance (a predecessor

of the Ministry of Strategy and Finance⁷⁰) and the Ministry of Trade and Industry⁷¹ (a predecessor of the Ministry of Knowledge Economy). In particular, the minister of EPB, as a deputy prime minister, had coordinating power over other economic ministries. EPB formulated the FEDPs by which it led the development of the Korean economy. The FEDPs had characteristics of an indicative plan, which established growth targets and provided selective or unselective incentives to achieve the targets. This developmental strategy of Korea was very similar to those of Japan and Taiwan, which created powerful economic agencies, established indicative economic plans, and provided direct or indirect incentives, though Taiwanese agencies had no executive authority as an advisory organisation and its incentives were relatively unselective (see Subsection 3.2.2).

The export incentive systems under the export-centred industrialisation mainly consisted of export loans, tax reduction and infrastructure provision to export businesses. The export loans with preferential interest rates were the most effective policy instrument to promote exports because the low interest rates⁷² themselves were economic rents to borrowers (Choi, 1997, pp.16-17). In addition, the government selected a reverse interest rate policy to mobilise private savings hidden in the korb financial market⁷³ by which the nominal saving interest rate increased from 15% annually to 30%, while the loan rate went from 16% to 26% in 1965 (Shin, 2003, p.57, Choi, 1997, p.16). This financial policy, however, weakened the soundness of Korean banks and increased the gaps between large companies and SMEs. This is because the SMEs could not easily gain access to the banks due to their lack of credit history and mostly relied on the korb financial market.

⁷⁰ The Ministry of Strategy and Finance was born in 2008 by combining the Ministry of Finance and Economy (a successor of the Ministry of Finance) and the Ministry of Planning and Budget (a successor of EPB)

⁷¹ The Ministry of Trade and Industry was created in 1948. By absorbing energy policies, it was renamed the Ministry of Commerce, Industry and Energy in 1993. President Lee Myeong-bak created the Ministry of Knowledge Economy by incorporating information technology policies from the Ministry of Information and Communication and from research and development policies from the Ministry of Science and Technology.

⁷² The difference of interest rates between general loans and expert loans was 8.9 percentage points during 1961-1965 when the annual average growth rate of exports recorded 40.4 %; it was 17.1 %age points during 1966-1972 when the growth rate was 37.7 %; and it was 7.6 percentage points during 1973-1981 when the growth rate was 35.1 % (Choi, 1997, pp.16-17).

⁷³ The korb financial market refers to the informal financial market where money, private liabilities and securities are traded.

Tax incentives were another policy instrument which had been used to promote exports and strategic industries, and to support SMEs. To illustrate, exporters had been granted the deduction of 80% of corporate and income taxes (Shin, 2003, p.61). Providing infrastructure for strategic industries incentivised rapid industrialisation. The government provided land at cost and constructed road, rail, port, water supply facilities and sewerage for the strategic industries. The export-led industrialisation cultivated light industries, which had a comparative advantage due to enough skilled labourers in Korea. To illustrate, the share of four raw materials in total exports: iron ore, tungsten, raw silk, and coal was 38% in 1961, while textiles alone took 40.8% in 1970 (Lee, 2005c, p.398). Moreover, the share of agricultural and marine products in total exports significantly decreased from 43% in 1962 to 11.2% in 1970, while industrial products increased from 27% to 83.6% during the same period (Lee, 2005c, p.398).

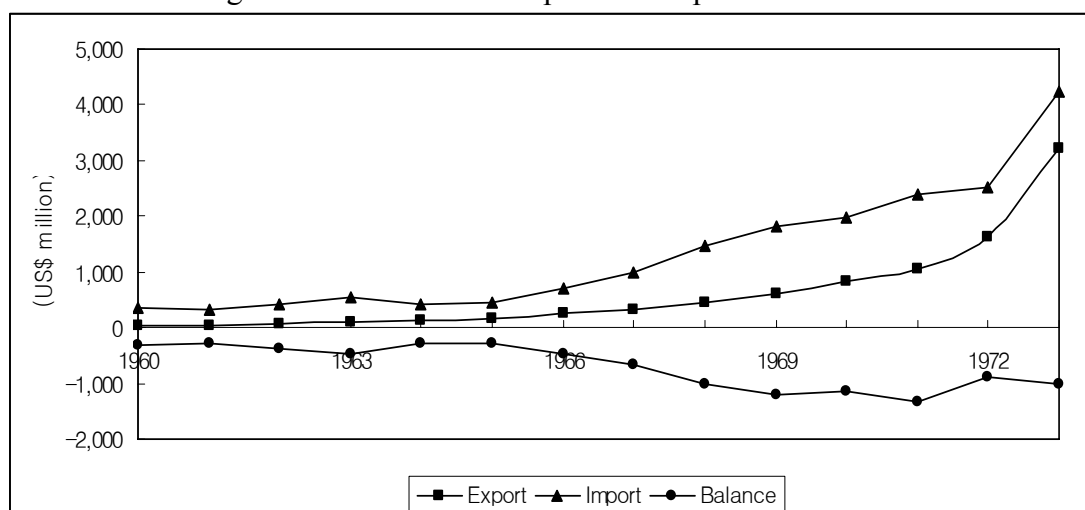
6.4.2 C.E.1-2: Heavy and Chemical Industrialisation in the 1970s

During the period of export-led industrialisation, the ratio of imports to exports had noticeably decreased from 10.46 times in 1960 and to 2.65 times in 1965. However, the growth of light industries led by exports in the 1960s required more imports of intermediate and capital goods (Kim, 1990a, p.1, Kim, 1994, p.52). The inclination of developed countries towards protective trade and the severe competition between the late industrialised countries from the second half of the 1960s made international trade worse (Cho, 2004a, pp.78-79, Lee, 1999, p.119). Trade deficits had increased from USD 288 million in 1965 to USD 1,326 million in 1971 as shown in Figure 24. In addition, the IMF's upper limit of foreign loans, rapidly increased interest rate of foreign loans, and the devaluation of the dollar depressed the Korean economy (Choi, 1988, pp.133-134, Cho, 2004a, pp.78-79).

In this context, many exporting companies expanding their businesses by relying on national and foreign loans became insolvent. The Park regime introduced an emergency measure, named the '8·3 Measure', which froze companies' debts of KRW 335 billion (GBP 357.7 million at the closing rate of December 1972) from the korb financial market, provided special loans of KRW 200 billion (GBP 213.5 million) and a rationalisation fund of 65.8 billion (GBP 70.3 million), and cut interest rates sharply. The structural problem of the export-led economy cast doubt about the continuous

growth of the Korean economy. Korea, like Japan and Taiwan, started departing from labour intensive, light industrialisation and proceeded to capital intensive HCI. To surmount comparative disadvantages of heavy and chemical industries and draw huge investments, the Korean government adopted strong selective, imbalanced incentives⁷⁴ based on ‘the very similar underlying rationale of Taiwan and Japan’ (Wade, 1988, p.57, Johnson, 1982, p.29).

Figure 24 The Trend of Import and Export in the 1960s



Source: Korea International Trade Association (2007)

HCI was a way to develop military industry for national security and to overcome the limit of light industrialisation for continuous economic growth with which Park legitimised his revolution. Park Chung-hee was resolute about HCI. He strongly propelled the policy founded on his power. In an annual press conference in 1973, he stated:

I declare a new economic policy this New Year. We enter the stage of the heavy and chemical industrialisation. I declare to make every effort for the heavy and chemical industrialisation. ... By the beginning of the 1980s when the exports of 10 billion (US) dollars is achieved, the share of the heavy and chemical industry in the total exports must be more than 50 percent. To do this, (the government) will give an impetus to the industrial development of ship building, machinery and petrochemicals (Hankook-Ilbo, 1973, p.1).

⁷⁴ Policy instruments for the export-led industrialisation basically treated exporters equally (Kim, 1990a, p.1).

However, the response of businesses was cold because the industries needed huge investments and large businesses were risk-averse. Moreover, EPB was pessimistic about the radical HCI policy in view of the comparative disadvantage of the Korean economy, and stressed the slow movement to HCI (Park, 2005f, p.405). To subjugate the internal and external barriers, President Park founded the Heavy and Chemical Industry Promotion Committee under the Office of the Prime Minister and established the Heavy and Chemical Industry Planning Council headed by the Presidential Economic Secretary. EPB and economic bureaucrats were excluded in HCI decision making process, and technocrats from the Ministry of Commerce and Industry and the Ministry of Finance played the leading role in the committee (Park, 2005f, p.410). Moreover, by presiding over the committee, the president had control over HCI policy. In addition, the regime established the 'Heavy and Chemical Industrialisation Plan.' The plan, as a master plan for HCI, included the total scale of investment, a schedule of investment, and the scope of participating companies limited within large companies (Chang, 2004, p.65). HCI Plan did not only change the third FEDP fundamentally, but also meant the advent of a new industrial policy (Park, 2005f, p.408, Chang, 2004, p.65).

Among diverse policy instruments, such as import protection and tax exemption, the allocation of credit was the strongest incentive which provided economic rent to borrowers. This was because of a lack of available domestic and foreign capital and its preferential interest rate which was mostly lower than inflation rate. The government founded the 'National Investment Fund' in 1974, of which two thirds was allocated to HCI projects (Kim, 1990a, p.19, Lee, 2003, p.157). More importantly, the government exerted its power over special and commercial banks to give policy loans to six strategic industries: steel, non-ferrous metals, chemicals, shipbuilding, machinery, and electrical appliances and electronics. Roughly 55 to 68% of total banking loans were allocated to the strategic industries (Kim, 1990a, pp.20/22). These economic strategies and instruments were relatively effective in encouraging investment and developing the industry in the initial stage. However, this context favoured large companies which had more credits in borrowings and ability to pay them back, and in turn created large family-owned conglomerates, called *Chaebol*.

6.4.3 E1-1: Socio-political Movement suppressed by the Developmental State

The export-led industrialisation focusing on light industry rooted its competitiveness in low-waged, but well-educated labour⁷⁵. The ‘Growth-First and Distribution-Later’ policy led by the Park regime had taken a rigid position against the increase of labour costs and the protection of labour rights (Choi, 1988, p.135). For instance, the Park regime dissolved labour unions on 23 May 1961 and reorganised the Federation of Korean Trade Unions to control labour unions and movements (Lee et al., 1999, p.120). In this context, Park Chung-hee eradicated the constitutional constraint of his running for a third term on 17 October 1969. His intention to have the long-term seizure of power and his strong hand on labour ignited massive resistance from the opposition politicians, the labour force and the public. The opposition party, *Shinmindang*, organised ‘the National Struggle Committee’. Demonstration by civic groups and university students followed. Labour movements were more extreme. Chun Tae-il, a 22 year old tailor of a cloth manufacturing company at Pyunghwa market, committed suicide with burning gasoline on 13 November 1970. He was requesting the observance of the Labour Standard Act and an increase in wages. Big labour movements and another suicide by burning followed. Furthermore, intellectual classes, such as lecturers, pressmen and apprentice doctors, raised their voices to have autonomy in their professions.

This mood affected the presidential election in April 1971, when Park Chung-hee narrowly won with 51.2% against the opposition leader Kim Dae-jung’s 43.6%. His party failed to have the two thirds of the seats in the National Assembly needed to amend the Constitution in the general election⁷⁶ in May 1971. These social and political pressures threatened the possibility of the Park regime to maintain the long-term seizure of power. In addition, the Nixon Doctrine changed the USA’s diplomatic policy towards rapprochement between the West and the East, by which the USA decided to reduce the US force in Korea in 1970. An announcement of US President Nixon’s visit to China on 16 July 1971 and the UN’s decision to expel Taiwan and affiliate China on 26 October 1971 gave a shock to Korea. The change in international politics was perceived as a deadly threat to the security of Korea (Choi, 1988, p.150).

⁷⁵ Illiteracy rate of the Korean population aged 12 years and over in 1955 was only 22.3 %. Men’s illiteracy rate was 12.2 %, while women’s rate was 32.1 % (Korea National Statistical Office, 1955).

⁷⁶ In the 1971 General Election, the ruling party, *Gonhwadang*, took 113 seats out of 204 seats while a main opposition party, *Shinmindang*, won 89 seats. The ruling party took only one seat out of 19 seats in Seoul, the Capital city and two out of 8 in Busan, the second largest city (Choi, 1988, p.169).

On 17 October 1972, President Park executed Presidential Emergency Measures, referred to as the ‘October Revolution’. These measures dissolved the National Assembly, suspended the validity of the Constitution and created the Emergency State Council which replaced the function of the Constitution. The regime revised the Constitution, namely the ‘*Yushin* Constitution⁷⁷’ by a national referendum on 21 November 1972 with poll of 91.9% and approval of 91.5%. Park Chung-hee was re-elected by the National Conference for Unification on 23 December 1972. The Park regime justified the October Revolution in the name of national security and continuous economic development (Choi, 1988, pp.174-175).

Even though the Chun Tae-il death event provoked radical labour movements and drew intellectuals’ attention to the labour movements, the labour movements for protecting ‘the right to live’ at small factories were not collectively organised and became weakened under the authoritarian *Yushin* regime. Nevertheless, the Chun Tae-il event was evaluated as a seed for the democratic labour union movement of the late 1970s (Lee et al., 1999, p.124). In particular, a labour dispute of YH trade⁷⁸ in August 1979 provoked national attention and developed into a democratic movement of opposition leaders and students. In this context, President Park was assassinated by his Minister of the National Intelligence Service on 26 October 1979. Korea enjoyed a very short ‘Seoul Spring’ until 18 May 1980 when another military junta, the Chun regime, crushed the 5.18 Democratic Uprising against the Chun’s military coup by military force.

6.4.4 E1-2: Weak Environmental Movement under the Developmental State

⁷⁷ The *Yushin* Constitution changed the presidential election from direct election to indirect election and amended the election of assemblymen by which a third of them were indirectly elected. The constitution provided a basis for Park Chung-hee to extend his seizure of power and control the National Assembly.

⁷⁸ 200 workers of YH trade demonstrated in the headquarters of a major opposition party, *Shinmindang* [New Democratic Party], demanding the withdrawal or closing of the company, clearance of overdue wages, and succession of employment from 9 to 11 August 1979. However, the police entered the headquarters and used violence against the workers, Assemblymen, and reporters in order to quell the demonstration. Furthermore, the police arrested 172 female workers, 26 members of the party and eight labour leaders. Kim Young-sam, the president of the party and the 14th President of Korea, was deprived of his right as an Assemblyman and the president of the party. This case was the source of the Buma Uprising in which more than 5,000 students and civilians participated and destroyed police stations, a provincial office, and broadcasting stations in October 1979. Even though the uprising was settled by force, it ignited a latent conflict between power elites which resulted in the assassination of President Park (Lee et al., 1999, p.124).

Under the developmental regime, environmental issues were totally neglected. Rather, environmental pollution was a sign of industrialisation. To illustrate, President Park Chung-hee proclaimed at the groundbreaking ceremony of Ulsan Industrial Site on 3 February 1962:

On the day when the resonant wagon sound of the construction of the second industry vibrates the East Sea and the black smoke of industrial production rises into the air, (we will) realise that the hope and prosperity of our nation and people arrive in front of our eyes (Kyunghyang-shinmun, 1962, p.1).

The developmental state did not tolerate the environmental movement by designating it an anti-government activity (Koo, 1996, p.150). It not only restrained civil movements including the environmental movement, but also controlled environmental information analysed by academics and research institutions. To illustrate, the Park government censored ocean water pollution data published by a professor from National Fisheries University of Busan and dismissed the chancellor of the university in 1973 (Koo, 1996, pp.150-151). As a result, environmental NGOs were not organised until the 1970s and the environmental movement was constrained within victims' protest or request for compensation.

Rapid industrialisation in the 1960s and the 1970s was accompanied by environmental accidents. In the 1970s, Korea witnessed a large number of fish deaths in rivers and seas, severe skin diseases near heavy and chemical industrial complexes, and agrichemical poisoning. The pollution event of Samsan Plain near Ulsan Industrial Complex⁷⁹ was a representative pollution event of the 1970s. The first heavy and chemical industrial site, Ulsan Industrial Complex, had been constructed and accommodated some factories, including Hankook Aluminium Co. Ltd since 1962. Samsan Plain had suffered damage to rice plants since the factories started operating. Farmers started asking for compensation for the loss of plants from 1969. This became an annual event due to continuous damage. A farmer said, "Even though we know that we cannot harvest

⁷⁹ As the first national industrial complex of Korea, Ulsan Industrial Complex has an area of 48,055km² and accommodates 657 heavy and chemical producers as of 2007 (Korea Industrial Complex Corp., 2007).

anything, we bed out rice plants. Otherwise, we cannot receive any compensation” (Shin, 2006f, cited from the Korean Research Institute of Environmental Problems, 1986). However, this event did not attract much interest from the press or public.

6.4.5 E1-3: Formation of the Supply-oriented Governance

The Korean developmental state had depended heavily on plan rationality which created several economic plans. The FEDPs were the basic plans guiding the economic development of Korea. The establishment of infrastructure was subordinate to the FEDPs in that the Korean developmental government employed the expansion of infrastructure as an economic incentive to promote industrialisation. The Comprehensive National Territorial Development Plans (CNTDPs) founded on the FEDPs have provided a whole picture of infrastructure development. National Water Resources Plans have decided more specifically how much water resources would be developed in which areas and for which region. To illustrate, if the government anticipates the rapid increase of steel demand due to the progress of industrialisation, the FEDPs suggest the prospects of steel supply and demand, times and places to build steel factories, plans for infrastructure like water, roads, rails and ports (Lee, 1997, p.85).

6.4.5.1 Securing and Supplying Water to Support Industrialisation

In the late 1950s, the focus of infrastructure policy was on the reconstruction of infrastructure destroyed during the Korean War between 1950 and 1953. US aid played a crucial role in rehabilitating the infrastructure from 1953 to 1956, and the Korean government could not afford to expand the infrastructure for economic development (Hong, 1999, pp.12-13). The first FEDP set up the modernisation of industrial structure, export promotion, and the self-sufficiency of food as the main targets. The plan included the developmental plan of water resources concentrating on the construction of multi-purpose dams and the investigation of the four large river basins in order to secure and provide drinking, agricultural and industrial water, and prevent flooding (Kwater, 1994, p.91).

As the Park Chung-hee regime chose a disproportional economic development strategy, the land development policies between the 1960s and the 1970s focused on selected

regions which accommodated large industrial complexes and population. In the 1960s, the development of industrial complexes mostly relied on private companies which decided the places and sizes, even though the government established a few export-industrial complexes in the Capital Region and Ulsan in the decade (Ministry of Construction and Transportation, 2007, p.266). The 1970s could be characterised as the developing period of industrial complexes led by HCI. The government enacted the Industrial Site Development Act in 1973, by which it constructed 15 national industrial sites, including large heavy and chemical industrial belts in the east-west coasts. These industrial sites embrace representative industrial complexes, such as Gumi electronic complex (10,233 thousand m²), Yeosu petrol-chemical complex (60,181 thousand m²), Changwon machinery complex (52,595 thousand m²), Ulsan car and shipbuilding complex (48,055 thousand m²) and Pohang steel complex (37,868 thousand m²) (Ministry of Construction and Transportation, 2007, pp.493-494)..

Naturally, water supply facilities, which are a direct input factor of production, had been constructed to support the economic and land developmental plans. Before the 1960s, the water resources had developed for a single purpose such as generation, flood control, or water supply without considering the comprehensive use of water in river basins (Korea Water Resources Association and Kwater, 1997). The investigation projects of the four large river basins, which had been conducted between 1966 and 1972, were the first step to comprehensively develop water resources. According to the projects, developmental plans for dams, regional and multi-regional water supply systems and wastewater treatment systems were prepared. To meet the rapidly increasing demand for water in the capital region resulting from industrialisation and the increase in population, the construction plan of *Soyangang* multi-purpose dam in the Han River was included in the first draft of a comprehensive development plan of the Han River basin (Korea Water Resources Association and Kwater, 1997). The dam construction started on 15 April 1967 and finished on 15 October 1973. President Park Chung-hee gave significant meaning to the construction of Soyanggang Dam. He addressed:

Soyanggang Dam will play a prominent role to contribute to supplying drinking, industrial and irrigation water, and controlling flood for Chuncheon and Gyeong-in regions, so the meaning of the dam construction is very big. Today, we see the live evidence that human

will overcome and won a victory over the great nature through the dam construction (Gal, 1972, p.1).

The Park regime continued to construct large multi-purpose dams during the 1960s and the 1970s, whose share is 36.9% of multi-purpose dams in the total capacity of potable and industrial water supply (Ministry of Construction and Transportation, 2005). Nonetheless, the dams were hardly used for local areas where they were constructed, but provided stable water to large cities and industrial sites and protected those from floods.

One of the incentives for industrialisation is the establishment of industrial water supply and wastewater treatment systems at the cost of the government (Ministry of Construction and Transportation, 2007, p.284). The government placed weight on industrial water supply systems from the beginning of the 1960s when the water supply rate was only around 20% of the total population and multi-regional water supply systems were not introduced. The industrial water supply systems were mostly constructed for delivering water for heavy and chemical industries which usually consumed much water. To illustrate, among industrial water supply systems built in the 1960s and the 1970s, Ulsan industrial water supply system (water supply of 620 thousand m³ per day) is for the car industry, Pohang (295 thousand m³ per day) and Gwangyang (325 thousand m³ per day) for steel, Changwon (285 thousand m³ per day) for machinery, and Geoje (36 thousand m³ per day) for shipbuilding (Ministry of Construction and Transportation, 2005). The development of water resources and water supply systems reflected the developmental path of the Korean economy. The governance of water industry during the industrialisation period was supply-oriented. The early stage of water resources development aimed to support large cities and industrial sites. An interview with an ex-head⁸⁰ of the Daejeon Metropolitan Water Authority for this research⁸¹ presented a good understanding of the period:

When the Korean War finished in the 1950s, GNP (per capita) of Korea was \$68. And then it was around \$100 when 5.16 the military coup broke in 1961. Afterward, the first Five-

⁸⁰ He had worked in the authority for more than 30years and still works in the Daejeon Metropolitan City Facilities Management Corporation as the water quality management director

⁸¹ Interviews taken for this research are cited in this thesis without references hereinafter.

Years Economic Development Plan started in around 1962-1963. At that time, the most necessary were factories, but we had no water. And we had no money, so we held the Korean-Japanese Conference. That was for the right of appeal (for Japanese invasion). With that money, we firstly bought water facilities. In the case of Daejeon, a loan (from the OECD) was received in 1965. In those days, (Daejeon had) a water treatment plants (WTP) of 20,000 tons and a WSP of 3,500 tons, and (its) population was 190 thousands. We couldn't supply enough water to people, so we provided water to these areas in the morning and to the other areas in the afternoon.

6.4.5.2 Organisational Development for the Supply-oriented Governance

The Park Chung-hee regime pursued a strong and big government which had centralistic, developmental and authoritarian characteristics (Kim, 1997a, p.37, Park, 2006b, p.107). It created EPB, and strengthened the Ministry of Construction (a former MLTM) and the Ministry of Commerce and Industry in 1961. EPB played a pivotal role as the central tower for Korean economic development, which took charge of budget and economic planning. The minister of EPB, as the deputy Prime Minister, controlled and coordinated the economic and industrial policies. EPB set up the Five-Year Economic Development Plans which were the bases of other industrial and land development plans.

The Ministry of Construction, a predecessor of the MLTM, had been in charge of developing water resources and national land including industrial sites since 1961 when it was created by succeeding the Ministry of Restoration. Various land and water resources development plans and budgetary supports were strong policy instruments. The ministry established the Water Supply and Sewerage Bureau in 1979 by which it developed industrial water and multi-national water supply systems. The establishment of the Korea Water Resources Development Corporation⁸² (a predecessor of Korea Water Resources Corporation) in 1967 is a noticeable event in the history of water resources development in Korea. It is a state-owned company which has implemented

⁸² Korea Water Resources Development Corporation had changed its name to the Industrial Sites and Water Resources Development Corporation in 1974 and altered it to the Korea Water Resources Corporation, the present name, in 1988 according to the alteration of its functions.

the development of multi-purpose dams, multi-regional water supply systems and national industrial sites, under the supervision of the Ministry of Construction.

However, environmental concerns had not been sincerely reflected in the organisational structure until the 1980s, when the policy focus was changed from rapid economic growth to social and political stability and balanced economic growth. Before the Environmental Administration was established as an independent environmental organisation in 1980, a governmental department taking charge of environmental conservation had remained on a small scale. It started from a sub-division, named the Environmental Pollution Sub-division of the Ministry of Health and Welfare in 1967, which was expanded into a division in 1973. However, the influence of the Environmental Administration had been limited until the 1990s when environmental crises happened and strong environmental movements occurred. Therefore, the water supply facilities were constructed and operated based on economic concerns. Another interview with the ex-head of a metropolitan water authority described this situation vividly:

At that time (in the 1980s), (Korea) constructed (Daechong) dam, so water quantity problem was solved. ... However, nobody knew how to construct and manage dams, including the Korea Water Resources Corporation (Kwater). And then, from five years after the dam construction, water quality started deteriorating. (Kwater) did not remove anything like toilets. The dam was filled with excrements. ... On the contrary, economic condition became better from the 1980s. Many students started studying in the USA and came back to Korea around 1985 and 1986. From that time, they pointed out environmental pollution problems and started doing the environmental movement. In particular, people like Professor Chang Won from University of Daejeon had shouted that water had seriously decayed and the contaminated waters caused cancer. Consequently, concerns about (water) quality became national issues since 1985 and 1986.

6.4.5.3 Institutional Development for the Supply-oriented Governance

The FEDPs had been the highest formal institution which led the allocation of resources and the direction of economic development from the 1960s to the 1990s. The Park regime established several formal institutions to develop the FEDPs, including the

Regulations on the Economic Ministries Council, the Regulations on Economic Planning Council, and the Economic Development Special Accounting Act. However, when the first FEDP was developed in 1962, the FEDP was not elaborate and subordinate plans concerning the development of industrial site, transportation systems and water resources were not prepared. The first FEDP did not provided the complete characteristics of a comprehensive economic plan in that it only anticipated and coordinated the production and investment of each industry (Kim, 1982, p.2013, Kim, 1984, p.239). The focus of the second FEDP was on the optimal allocation of resources, which can be characterised as resource planning (Kim, 1982, pp.2013-2014).

The FEDPs had become more sophisticated from the third FEDP which comprehensively considered the gap between national saving and domestic investment and the balance between exports and imports by using an econometric model (Kim, 1982, p.2014). The third FEDP limited itself to suggesting price incentives for resource allocation rather than proposing detailed investment schedules for whole industries (Kim, 1982, p.2014, Kim, 1984, p.239). At the beginning of the 1970s when the third FEDP was formulated, the government introduced the CNTDP and the Ten-year Water Resources Development Plan (Lee, 1998, p.47, Kim, 1971, p.30, Cho, 1992, p.28). These plans had a hierarchical order: the FEDP-the CNTDP-the Ten-year Water Resources Development Plan. The first CNTDP intended to promote the efficient use of the national land as 'production spaces' (Lee, 1998, p.48). Corresponding to the third FEDP, which targeted USD 3.5 billion of exports and USD 1,000 of GNP per capita by HCI, the first CNTDP planned to establish large infrastructure, and the Ten-year Water Resources Development Plan was designed to investigate the four largest river basins and to construct multi-purpose dams as shown in Table 15.

Consequently, during the 1970s, the east-west heavy and chemical industrial belt was constructed, including Ulsan, Changwon, and Yecheon industrial sites. Gyeongbu Motorway was built connecting the capital city, Seoul, and the second largest city, Busan, at a distance of 417.4 km. Soyangang, Andong, and Daecheong multi-purpose dams were constructed. These plans had a characteristic of indicative plans (Kim, 1982, p.2014, Lee, 1997, p.85). That is, if the government anticipates the rapid increase of steel demand, the indicative plans suggest the prospect of supply and demand of steel, time and places to build steel mills, size and type of infrastructure like a harbour,

roads and rails to support the factories, and incentives to attract investments in the mills (Lee, 1997, p.85). The indicative plans were effective policy instruments to promote rapid industrialisation. These plans were mostly supported by special government acts, which included the Act on Comprehensive Plans for Construction in the National Territory, the Promotion for Industrial Site Development Act, the Promotion for Water Resources Development Act, and the Specific Multi-purpose Dams Act.

Table 15 Institutional Development for the Supply-oriented Governance

Periods	The Five-Year Economic Development Plans (FEDP)	The Comprehensive National Territorial Development Plans (CNTDP)	The National Water Resources Plans (NWRP)
1960s	The 1 st FEDP (1962-1966) - Overcoming a vicious circle of poverty - Expansion of exports - Development of infrastructure	-	-
	The 2 nd FEDP (1967-1971) - Modernisation of industrial structure - Exports of USD 700 mil. - Induction of foreign loans		
1970s	The 3 rd FEDP (1972-1976) - HCI - Development of four great river basins	The 1 st CNTDP (1972-1981) - Efficient use of the national land (production space) - Enlargement of infrastructure · Dam construction in Andong, Imha, and Hapcheon · Water supply target: 50% of population · Sewerage target: 40%	The Ten-year Water Resources Development Plan (1970-1980) - Stable water supply for irrigation and industrialisation/ flood control - Enlargement of hydro-electric power generation - Construction of single and multi-purpose dams

6.4.6 Successes and Failures of the Developmental State

6.4.6.1 Fast Economic Growth under the Developmental State

As analysed in the above sub-sections, the developmental way of the Korean economy did not follow the neo-liberal arguments based on the Washington Consensus. Rather the developmentalists' argument including Johnson and Wade is more persuasive. Under the desperate economic situation preconditioned by Japanese colonialism and the

Korean War and the failure of the import-substitution industrialisation of the Rhee government, the Park regime strategically chose export-oriented industrialisation in the 1960s and HCI in the 1970s. Even though the state-led economy caused severe economic crises at the end of the 1960s and the end of the 1970s respectively, the quantitative economic growth of Korea was considerable. The developmental and authoritarian government succeeded in overcoming the state of absolute poverty in Korea.

A question is how the Park regime accomplished the development, even though political elites and technocrats dominated the policy making process. Few answered it. Nonetheless, Lee Myeong-kyu's (1997, p.83) argument is persuasive. He explained the reason why the Park regime realised a certain degree of economic development is that people in Korea were in absolute poverty and had ardent wishes for economic development. The Park regime adopted 'Economic self-Sufficiency and Prosperity' as the first preferential policy in order to justify the coup and overcome the weakness of its legitimacy (Shin, 2003, p.52). This strategy met the needs of people in the first stage of industrialisation. Nonetheless, this developmental strategy revealed significant drawbacks, including a close relation between politics and business, economic disparity between classes, industries and regions, and economic, political and administrative centralisation.

6.4.6.2 A Close Relation between Politics and Business

Close relationship between the state and business was a conspicuous feature of the Korean and Japanese economies (Choi, 1999, pp.168-169, Johnson, 1982, p.331, Cowling and Tomlinson, 2000, p.F363, 2002, p.384). Unlike Japan and Korea, as investigated in Subsection 3.2.2, Taiwan's relationship between the government and the private sector was 'cool and distant (Wade, 1990, p.276)'. A major strategy employed by the developmental and authoritarian state of Korea was the provision of economic rents to specific industries and/or businesses. It had been very effective in attracting investments from business, but, was in most cases, inefficient. The rents led business to over-invest in incentivised sectors, which caused periodic economic crises when the Korean economy faced economic recessions. Paradoxically, Korean big business had jumped at each crisis due to the government's additional subsidies. During the

industrialisation period between the 1960s and 1970s, policy and export loans and tax reduction and/or exemption were irreplaceable resources for firms. Yet, the state often arbitrarily used the resources. Those resources had been kept in the first half of the 1980s by the Chun government, which provided special treatment to restructured industries and firms. When economic crises took place, the state's resources became increasingly vital to big business in that the state's support did not only determine their fate, but also provided them with a good chance to take off. One of the typical events is the insolvency of Kukje, the sixth largest Chaebol in the 1980s. When Kukje requested financial relief from the Chun regime to escape cash flow problems caused by ambitious expansion and poor export performance, the regime had it go bankrupt as a signal to other firms (Haggard and Moon, 1990, p.229). In contrast, the 8·3 Measure in 1971 froze the payment of all corporate debt owed to the korb financial market (Hwang, 1996, p.310). Investment reorganisation in the 1980s, facilitated by policy loans and tax reduction and exemption, deepened the economic concentration of the Chaebol (Choi, 1999, p.158). These special measures provided in the economic crises shifted financial resources from the public to big business.

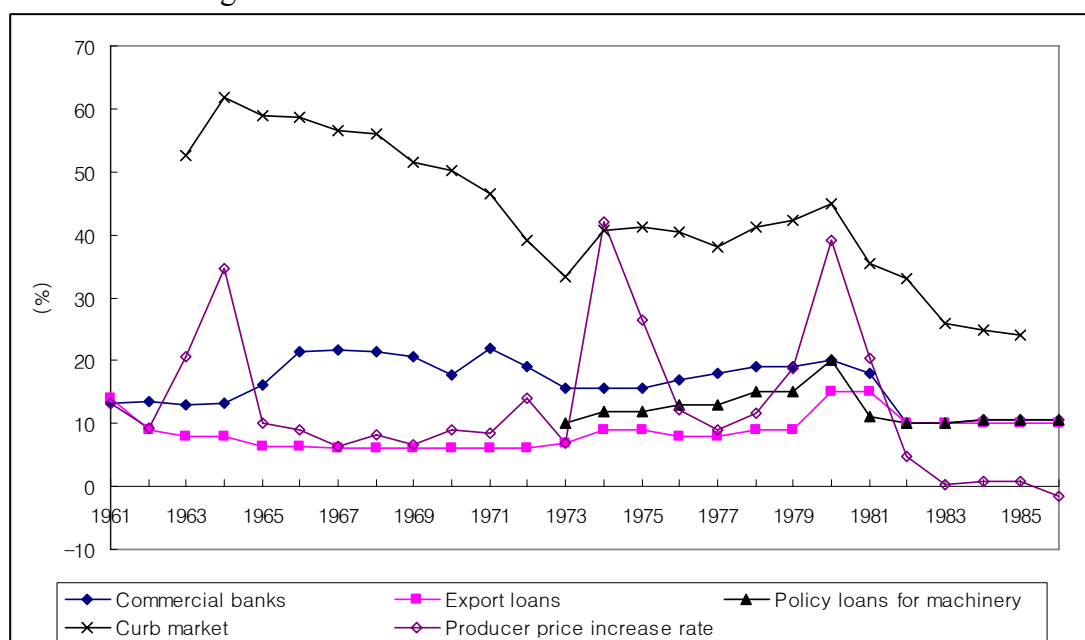
The Chaebol's support for economic policies was important to the developmental and authoritarian state of Korea. To military juntas, rapid economic development is the best way to legitimise their seizing power (Hwang, 1996, p.309). Presidents Park and Chun dedicated themselves to economic growth, so the Chaebol's compliance with their developmental policies was an important resource for the authoritarians. This close relation between the strong state and big business had big business employ expansive investment strategies. When being licensed to do strategic business designated by the state, the firm enjoyed policy loan, and tax reduction and exemption and mostly made high profits due to chronically high inflation during the industrialisation period (Choi, 1999, p.156). As a result, the Chaebol tended to depend heavily on debt for their business diversification, which caused Korea to suffer several economic crises.

6.4.6.3 Economic Disparity between Classes, Industries and Regions

The developmental state intentionally distorted factor prices to keep production costs of strategic industries low. Export and policy loans were given to businesses at low interest rates which were below the rate of inflation before the liberalisation of interest rates in

the early 1980s as shown in Figure 25. That is, borrowing itself was a great economic rent which was funded by the loss of savers and/or tax payers (Choi, 1997, pp.17-18).

Figure 25 The Trend of Interest Rates and Inflation Rate



Source: 1. Producer prices increase rate: Bank of Korea (Bank of Korea, 2007d)
 2. Interest rates between 1961 and 1970: Kim (1999b, p.134)
 3. Interest rates between 1971 and 1986: Choi (1997, p.17)

The developmental government strictly controlled the labour movement and wages. The price of agricultural products had been also kept low to support the low waged labourers. Even though the government adopted a dual rice price system by which it bought rice at higher prices than market prices, the government could manipulate the market price by imports. As a result, the economic gap between classes gradually increased, which provoked violent labour movements and farmers' demonstrations in the early 1970s and the late 1980s.

Moreover, preferential treatment for strategic industries increased gaps between industries and firms. In fact, most of the special treatment had been allocated to big business due to their comparative advantages, such as information superiority and fund raising ability. To illustrate, during the export-led industrialisation, the Chaebol dominated Korean exports, and export incentives in particular, by establishing comprehensive trading companies which traded their own products as well as goods made by SMEs. HCI also favoured the Chaebol due to the industry's capital intensive

characteristic. As a result, SMEs became subordinate to big business like the industrial structure of Japan, in which subcontractors in a 'keiretsu' are subject to a main firm (see Subsection 3.2.3). Yet, Taiwan heavily utilised large state-owned firms as their policy instrument (Cowling and Tomlinson, 2000, p.F365, 2003, p.38). Consequently, Korean and Japanese industrial organisations are more concentrated than Taiwan's (Hamilton and Biggart, 1988, p.S60).

The developmental government allocated limited resources into specific regions which were the Capital Region and the south-east industrial belt. This disproportionate economic development strategy resulted in economic disparity between regions, which became a main source of deep-rooted political division between the south-east region and the south west region.

6.4.6.4 Economic, Political and Administrative Concentration

Under the developmental and authoritarian state of Korea, decision making power converged in the hands of a few political elites. Economic and political resources were dominated by them. Economic incentives under the control of the elites were irreplaceable resources to the Chaebol, while the authoritarian presidents had power to nominate candidates for National Assemblymen. In addition, since President Park dissolved the local assemblies in 1961 when taking power by a military coup, the authoritarians had directed local politics and administration. The centralisation of resources and power caused severe problems. Big business tended to depend heavily on the state and expand their business to relevant and, in many cases, irrelevant industries with debts which were mostly provided by the state-owned banks or guaranteed by the government. This left a dire legacy in that bad debts became burdens of the government, and consequently of the public.

Local autonomy was severely damaged by centralisation. The central government allocated budgets to the local governments, nominated the governors, and took charge of personnel management. Accordingly, the local authorities generally looked to the central government and lobbied it to get more resources. Horizontal cooperation between the local authorities has been infrequent. This legacy still affects the present local autonomy, even though the local autonomy restarted in 1996. The central

government allocates a large portion of budgets for special purposes, sets up national plans emphasising unification and integration between national and local plans rather than cultivating diversification of localities.

Consequently, even though the developmental state had played a main role in Korean economic development, it innately had a short life (Kim, 1997a, p.32). The developmental state established long-term economic goals and provided direct and indirect incentives to achieve these goals. Therefore, when it succeeded in economic development, the private sector gained more resources and information and felt the intervention of the government bureaucratic red tape impeding the vitality and speed needed for further economic development (Kim, 1997a, p.45). Labour and civic groups strengthened by economic development started challenging the developmental state (Kim, 1997a, pp.45-46). However, as analysed, the authoritarian government effectively controlled and suppressed civic movements including labour and environmental movements and civil society was not fully developed.

The developmental path of the Korean economy has directly and indirectly affected the evolution of the Korean water industry. Japanese colonisation and the Korean War as temporal context drew a broad line which conditioned economic development policies. The Rhee regime reacted to the context with import-substitution industrialisation. But it failed. The failure became a direct input of export-oriented industrialisation. In turn, the exposed limitations of export-oriented industrialisation based on light industry led the Park regime to choose HCI. With the development first policies, low environmental demand from the public formed the supply-oriented governance of the Korean water sector.

6.5 Episode 2: The Supply-oriented Governance under the Dismantling Strong State

6.5.1 C.E.2-1: Aftermath of the Heavy and Chemical Industrialisation

HCI policy encountered an accidental obstacle when President Park was assassinated by Kim Jae-gyu, the chief of the Korea Central Intelligence Agency, on 16 December 1979.

Soon after the assassination of President Park, General Chun Doo-hwan seized power by force on 12 December 1979, namely the '12·12 Revolt'. In May 1980 General Chun's army suppressed a civil uprising, called 5·18 Democratisation Uprising, in which 191 civilians were killed and 852 injured. General Chun became the twelfth president of Korea by the indirect election of the Presidential Electoral College according to the amended Constitution on 3 March 1981⁸³. As a result, another authoritarian government was formed.

The assassination of President Park shocked the depressed Korean economy in the late 1970s. The GDP of 1980 recorded the first negative growth of -1.5% since the 1960s⁸⁴, when the state-led industrialisation started. HCI was mainly driven by policy loans with preferential interest rates, which boosted over-demand. Financial risks of the large companies in heavy and chemical industries had incrementally increased. Consequently, equity/asset ratios of heavy and chemical businesses in 1978 were around 20%. In particular, metal and wood machinery industry experienced the significant decrease of equity/asset ratio from 36.6% to 14.0%, while engine and turbine industries fell from 30.9 to 16.9 (Park, 2003b, p.216). Due to lack of domestic capital, strong demand on investment loans swiftly amplified foreign debts as shown in Table 16. The progress of HCI generated the high level of demand for capital goods which was another factor increasing trade deficit, because the initial stage of HCI inevitably focused on simple processing and assembly works. An over-capacity problem in machinery and fabricated metal industries resulting from misallocation of resources, has been bitterly criticised (Kim and Leipziger, 1993, p.24, Kim, 1990a, p.34).

The low interest rate policy to support HCI led increased liquidity to be invested in land rather than absorbed by financial institutions, pushing real property prices upward (Kim, 1990a, p.32). HCI provoked excess demand on labour, underinvestment in light industries and undersupply of consumer goods (Kim and Leipziger, 1993, p.24, Kim, 1990a, p.31). What was worse, the 1979 oil shock struck a hard blow to the Korean economy by a sharp increase in oil and raw material prices. The government failed to

⁸³ General Chun was elected as the eleventh president on 28 August 1980 by the *Yushin* Constitution. He amended the *Yushin* Constitution which had been severely criticised and was re-elected as the twelfth president by the amended Constitution on 3 March 1981.

⁸⁴ Annual growth rates of GDP were 8.40 % in the 1960s and 7.24 % in the 1970s.

properly control the money supply, so Korea suffered rampant inflation, recording a consumer price increase of 28.7% and a producer price increase of 38.99% in 1980.

Table 16 Foreign Loans and Trade Balance at the end of the 1970s

(Unit: USD billion)

Year	1977	1978	1979	1980	1981
Foreign Debts	12.6	14.9	20.5	27.4	32.5
Newly Introduced Foreign Debts	2.6	3.2	7.0	8.5	7.2
Foreign Debt Services	1.3	2.1	2.6	2.9	3.8
Trade Balance	- 0.8	- 2.3	- 5.3	- 4.8	- 4.9
Consumer Price Indexes (2000=100)	16.164 (10.09%)	18.502 (14.46%)	21.892 (18.32%)	28.174 (28.70%)	34.19 (21.35%)

Note: Figures in brackets are annual increasing rates of consumer prices.

Source: Kim, C (1996a, p.82) and Bank of Korea (2007c)

6.5.2 C.E.2-2: Industrial Reorganisation and Economic Stabilisation: 1981- 1987

6.5.2.1 Industrial Reorganisation

The economic crisis in the late 1970s and disproportionate economic development policies of the former regime were used as a good basis for General Chun to legitimise the military coup and differentiate his economic and political policies from the former regime. The Emergency Committee for National Protection organised and chaired by General Chun attributed the reasons for the economic crisis in the late 1970s to HCI policies. The committee insisted:

Side effects and malfunction due to over investment on some heavy and chemical industries did not only lead to loss of investment efficiency, but also to weakening of international competitiveness. Even though (the government) has invested 80 percent of policy loans, (it has caused) insolvency of companies and unsoundness of industries (Suh, 1980, p.1).

The perception was in line with that of EPB and neo-classical economists. EPB was not only pessimistic about the initial stage of HCI in the early 1960s, but also suggested a stabilisation policy in 1978 and 1979 (Kim, 1989, pp.295-296). Neo-classical

economists perceived that HCI policies misallocated economic resources, facilitated vicious inflation, and enlarged economic gaps between classes and industries. However, the Chun regime used a direct hand for the industrial reorganisation, which was not much different from the former regime. To illustrate, the Emergency Committee for National Protection forced Daewoo to acquire generation facilities and heavy equipment from Hyundai, and had Hyundai Motor merge with Saehan Motor (Byeon, 1980, p.1). The role of creditors was restricted as policy implementers alleviating financial burdens of acquiring companies by writing off debts and/or reducing interest (Lee et al., 2004c, p.48). The restructuring was executed against 25 companies in six industries: generation facilities, heavy equipments, diesel engines, electronic exchangers, heavy electric machines, and copper refining. Consequently, 13 companies became monopolies in each sector and 12 companies were merged or specialised by 1981 (Lee, 1999, p.131).

The Chun regime established systematic institutions for industrial rationalisation. The government organised the Industrial Policy Council⁸⁵, which prepared the Standard of Industrial Rationalisation Support in 1986. The council was mainly involved in selecting insolvent companies and supporting the rationalisation of those companies and industries based on the Tax Reduction and/or Exemption Act. The Industrial Policy Council, founded by the Industrial Development Act in 1986, focused on the development of industrial competitiveness. Industrial rationalisation by the council and the Industrial Development Act exercised strong policy measures: a ban on new entry into selected industries, inducement of production specialisation, and reduction and/or replacement of production capacity. The government had the Bank of Korea, the central bank, create the Industrial Rationalisation Fund to support rationalised industry (Lee et al., 2004c, p.30). According to these policy measures, 78 insolvent companies including Kukje Group and Myeongseong Group were liquidated between 1986 and 1988 (Lee et al., 2004c, p.32).

6.5.2.2 Financial Stabilisation

⁸⁵ The Industrial Policy Council consisted of 10 ministries related to industrial policy, the Chief Economic Secretary, and the Secretary of Administrative Coordination. The council was headed by the Minister of EPB.

President Chun perceived high inflation as a fundamental problem caused by the developmental strategies executed by the former regime. He showed his strong resolution on economic stabilisation in his new year's statement on 22 January 1982 as follows:

Secondly, (I will) remove innate thought of price increase, that is, the expectation of inflation. ... Accumulated price increases for long time decreased export competitiveness, in turn, rises in foreign exchange rates were inevitable, which promoted price increases again. Moreover, over-investments concentrated on some industries and overheated boom beyond our economy caused structural contradictions including general decrease of economic efficiency and enlargement of disparity between sectors (Chun, 1982, pp.12-13).

To achieve economic stabilisation, tight fiscal control and conservative monetary policies were employed. The government reduced fiscal deficit from 4.6% of GNP in 1981 to less than one percent of GNP in 1985 and the monetary growth rate from an average of 30% during 1979-1982 to 15% during 1983-1985 (Kim, 1990a, p.41). In addition, the Chun regime abandoned the sectoral industrialisation policy and removed all preferential lending rates for policy loans (Shin, 2003, p.114). By imposing guidelines, the government strictly controlled wage increases, which were usually maintained under productivity growth except in 1982 and 1985 (Shin, 2003, p.114). Accordingly, consumer prices were dramatically stabilised from 21.35% of inflation in 1981 to 3.42% in 1984, while producer prices showed a similar pattern from 20.41% to 0.17% during the same period. Due to three low phenomena of the global economy in the late 1980s: low interest rate, low oil price, and low dollar value (high Yen value), Korea enjoyed both financial stability and economic growth.

6.5.3 C.E.2-3: Political Democratisation and Economic Liberalisation: 1987-1992

6.5.3.1 Legacy of the Authoritarian Government

The Chun regime took a step towards the market by adopting various economic policies, such as the removal of preferential incentives for specific industries and the

privatisation of commercial banks⁸⁶. Nonetheless, there is little argument over classifying the regime as an authoritarian state. This is because the regime did not only use direct measures to reorganise troubled industries, but also used hard-line policies to suppress political, social and economic demands from the public. The regime subjugated the 5·18 Democratisation Uprising by force, discharged democratic academics from universities, merged and closed newspapers and broadcasters, and regulated political activities (Hong, 1995).

These high handed measures resulted in the regime's defeat in the 1985 general election. Even though the ruling party, *Minjujeongui-dang*, took 148 seats out of 276 seats in the National Assembly, it received just 35.2% of the vote. The reason why the ruling party held a majority was that 61 seats were allocated by the proportional representation system which gave two-thirds of the total proportional representation seats of 92 to the first party (Hankook-ilbo, 1985b, p.1). After the general election, opposition parties strongly and continuously requested the amendment of the Constitution for the direct presidential election. President Chun responded by declaring 'the Protection of the Constitution' on 13 April 1987 and prohibited any argument for constitutional revision. However, the death by torture event of Park Jong-cheol, a student from Seoul National University, provoked massive civil demonstrations. On 10 June 1987, 18 cities witnessed huge demonstrations. On 26 June, more than one million people in 38 cities participated in demonstrations, namely the 'June Uprising' which paralysed police forces. The demonstrations led to the 6·29 Declaration which accepted the request for the amendment of the Constitution on 29 June 1987.

6.5.3.2 Political Democratisation and Economic Liberalisation: 1987-1992

After severe economic depression in the late HCI period, economic bureaucrats from EPB regained their decision making power and assaulted the direct governmental measures for industrialisation. The need for President Chun to clear the legacy of the previous regime and to differentiate his regime from the previous one supported the ideas of the neo-liberalists. They put their first priority on economic and financial

⁸⁶ Commercial banks in Korea were purchased by the Park Chung-hee regime in 1962. The Korean commercial banks had been under the control of the state and the government easily mobilised banks' credits as a policy measurement. A representative case is policy loans.

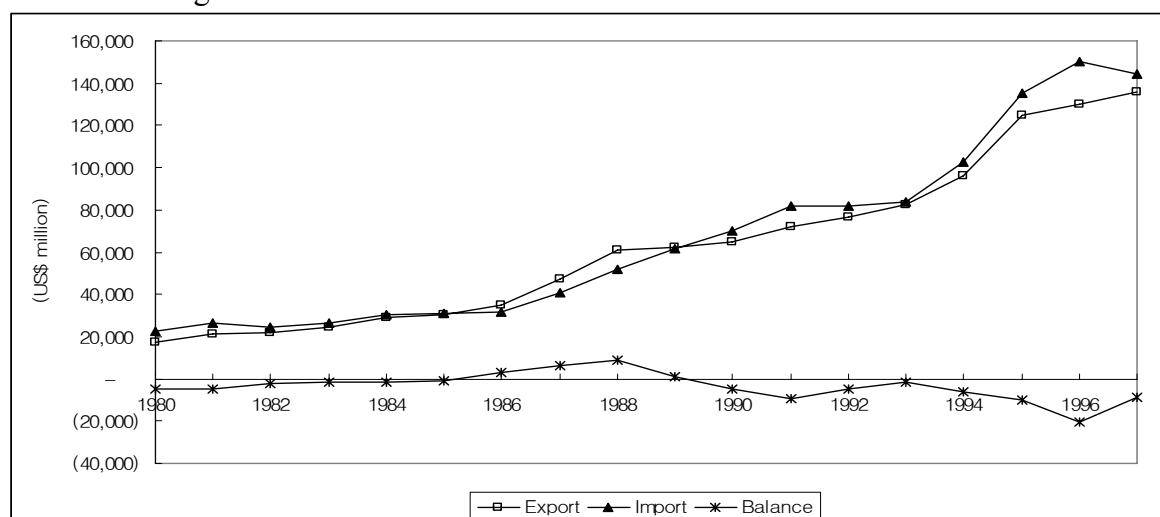
stabilisation and pursued economic liberalisation. On the other hand, pressure for political and economic democratisation from labour and requests for market-centred liberalisation by big business left the Rho Tae-woo regime (1988-1993) only a few available options that might be constrained to technological development and industrial adjustment (Shin, 2003, p.117). The advent of Reaganomics to overcome the depression of the US economy based on neo-liberalism put pressure on the NICs to open their agricultural and service markets, to reduce import taxes, and to liberalise finance and foreign exchange (Ahn and Lim, 1999, p.14). What was worse for the Rho regime, it failed to gain a majority of the National Assembly seats in the 1988 General Election by taking only 125 out of 299 seats.

The growing power of opposition parties due to gaining a majority of the National Assembly seats and pressure from civic society had the Rho regime progress political democratisation. The National Assembly introduced public hearings against illegal accumulation of wealth of the Chun regime. The establishment of the Constitutional Court, the reduction of the role of the National Intelligence Service, the abolition of the Framework Act on Press, and revision of the National Security Act and the Assembly and Demonstration Act followed. However, the Rho regime revealed its limitation towards political democratisation by restricting specific actors (The Korean Federation of Teachers and Educational Workers Union, and the Association of National Labour Movement Organisations etc.), particular ideas (socialism), and special action (unification movement) (Bae, 1995, p.165).

The Rho regime took an expansionist's position in order to meet demands of labourers, farmers and fishermen, who had been neglected by the authoritarian regimes (Choi, 1999, p.159). The regime wrote off the debts of farmers and fishermen by KRW 2.5 billion (GBP 2 million at the closing rate of December 1988) per year, increased the government's purchase price of rice from 6% in 1986 to 16% in 1988, subsidised the development of farming and fishing villages by as much as KRW 1,200 billion (GBP 845 million at the closing rate of December 1991) in 1991 and KRW 1,500 billion (GBP 1,259 million at the closing rate of December 1992) in 1992, and extended regional medical insurance (Choi, 1999, pp.159-160). The large construction of two million houses and a high-speed railway from Seoul to Busan were carried out. Consequently, government spending expanded by 266.1% between 1988 and 1992,

exceeding the growth of current GNP by 50% (Park, 1998b, p.128). This resulted in the deterioration of the trade balance from USD 6,261 million in 1987 to USD – 9,655 million in 1991 as shown in Figure 26 and a rise in consumer prices from 6.1% to 9.5% during the same period (Choi, 1999, p.160).

Figure 26 The Trend of Trade Balance between 1980 and 1997



Source: Korea International Trade Association (2007)

The Rho regime tried not to involve itself in the dispute between labour and capital, but stressed an equivalent relation between them when coming into power (Lee and Kim, 1993, p.83). Nonetheless, the regime did not give up authoritarian measures, such as the prohibition of the third-party intervention in labour disputes, a system of company unions⁸⁷, and the prevention of labour unions' political activity, against the labour movement (Park, 1990, p.170). In fact, the Rho regime attributed the cause of bad inflation and economic depression between 1987 and 1989 to the radical labour movement. It mentioned in 'the Diagnosis of Korea's Economic Reality and Policy Choices' that without restraining labour disputes and controlling the desires of labour, the growth of the Korean economy was impossible (Park, 1990, p.172). The government again started to use a strong hand against the labour movement from the middle of 1989. To illustrate, the Rho regime adopted a guide line policy for wage increases, by which the government enforced a single digit increase of wages in 1990 and strongly drove a 5% increase of total wages in 1991 (Lee and Kim, 1993, p.83).

⁸⁷ The Chun regime introduced the prevention of the third party intervention and a system of company unions to prevent intervention by the Federation of Korean Trade Union, industrial unions and students in labour dispute (Haggard and Moon, 1990, p.224).

Labour unions could not effectively resist the government's intervention because of the public's cold response against the radical, sometimes violent, labour movements.

On the other hand, the Rho regime tried to maintain the economic liberalisation policy of the Chun regime. The policy can be classified into four sub-categories: eradication of preferential measures for specific industries and firms, establishment of regulatory systems to prevent monopolistic behaviour, opening the domestic market, and liberalisation of financial systems and institutions. President Chun removed the preferential interest rate of policy loans, enacted the Monopoly Regulation and Fair Trade Act in 1980 and the Industrial Development Act in 1986, and abolished seven special acts to subsidise HCI. However, the Chun regime heavily used preferential treatments, including long term loans with low interest rates, tax exemption and debt relief, in the course of restructuring the heavy and chemical industry. The decision making was in the secret hands of a few political elites. These lowered the receptiveness of the Chaebol as Chung Joo-yong said that the Chun regime deprived him of his company, *Hanguk* Heavy Industries (Yoon, 1992, p.19). This is because the Chun regime forced Chung, the chairman of Hyundai, to sell the firm. Internal and external pressures did not allow the Rho regime to employ the preferential measures for particular industries and companies. The Rho regime attempted to introduce the public concept of land ownership and the real-name account system in order to progress economic democratisation and to correct economic inequity. However, the resistance of business had the regime abandon the real-name account system and restrict the public concept of land ownership⁸⁸ (Bae, 1995, p.165). The Rho regime furthered import liberalisation, so import items on the automatic approval list increased from 68.6% in 1980 to 97.3% in 1991 (Shin, 2003, p.117).

During the Rho government, the local assemblies were founded in 1991, which was the first step for local autonomy. This progress reflects on the fact that the state-led economic development and the growth-first ideology brought about disparity between regions and industries and the public started raising their voice against the economic

⁸⁸ Even though the Rho regime established the Ownership of the Housing Site Act, the Restitution of Development Gains Act, and Land Excess-Profits Tax Act, it excluded composite land tax, which levies heavier tax on people having more lands, one of the most important regulations to discourage excessive land ownership.

and political inequality and requested regional and industrial autonomy (Chun, 2002, p.337). Responding to severe challenges from the public and business, President Rho placed the first priority on welfare and equality at the beginning of his term. However, economic recession after 1988 Seoul Olympics led him to change his priority to economic stability by restraining wage growth and emphasising business competitiveness. His attempt was not successful as shown in Figure 26 due to conflict between his old welfare-oriented policies and new economic policies and people's distrust of his political will (Choi, 1999, p.160). During the Rho regime, Korea noticed that the authoritarian state started eroding.

6.5.4 E2-1: The 'Chaebol's Republic'

It seems to be impossible to explain Korean economic development without referring to the Chaebol, business conglomerates mostly owned and managed by a single family such as *Samsung* and *Hyundai*. The Chaebol have not only been the government's major collaborators for the state-led economy, but also opponents of the government's excessive intervention. Economic rents provided by the government were the basic sources creating the Chaebol. Disposal of government-vested properties after the Korean liberation in 1945 gave birth to Korean big business. The disposal at the lower prices than market prices and payment by 15 year instalments presented vast fortunes to the Chaebol (Choi, 1999, p.151). A two-tier exchange rate system employed for the import-substitution industrialisation by the Rhee regime was another source of creating large family-owned conglomerates in the 1950s. Many Chaebol, including *Samsung*, *Lucky-Gold Star* (the former name of LG), *Hanjin*, *Sunkyung* (the former name of SK), and *Korea Explosives* (the former name of *Hanwha*), were born in the late 1940s and at the beginning of the 1950s (Kim, 1997a, p.153).

The advent of the militant regime led by General Park in 1961 was a critical event for the Chaebol. The new regime attempted to clear the close relation between politics and business. However, the regime did not dissolve the large conglomerates, but finished its reform by nationalising commercial banks owned by the Chaebol and imposing fines of KRW 4 billion (GBP 5.6 million at the rate of December 1964) on them. Under the export-led industrialisation policy of the Park regime, large firms predominantly enjoyed export incentives, including export loans and tax exemptions. Most SMEs were

marginal exporters exporting between 10% and 20% of their output, whereas Korean exports amounted to around 35% of output in the aggregate (Amsden, 1989, p.181 referring to Lim, 1981). Capital intensive HCI in the 1970s favoured big business more than SMEs. Most policy loans and tax incentives were allocated to the Chaebol. Even though the Chun government abandoned a sectoral oriented economic policy and adopted an economic stabilisation policy in the first half of the 1980s, the government still had enough resources to provide economic rents and significant power to control big business. In the course of restructuring the heavy and chemical industry, the government granted special treatments to mergers: long-term loans with low interest rates, the waiver of debt obligations, and tax exemption (Choi, 1999, p.158).

Until the Chun Doo-hwan government (1981-1988), relations between the state and business can be characterised as business' total reliance on the state (Choi, 1999, pp.155/159). That is, the state distorted the distribution of resources to incubate a few selected industries and, in many cases, firms. Economic rents provided by the state had been too massive for business to divert their attention to other areas. Large companies' rent-seeking behaviour caused economic crises, including the IMF crisis, when the international economy was not favourable to Korea. Nonetheless, it is safe to say that incentives of the state were not the sole source of the growth of the Chaebol. Most successful Chaebol endeavoured to build their competitiveness and to expand their share in the international market. As Kim (1997a, pp.131-132) illustrates, Hyundai went to Southeast Asia and the Middle East based on the experience and domestic capital accumulated during the state-led industrialisation. It became the largest Chaebol at the end of the 1970s after succeeding in industrial construction works. Samsung has another story. It invested heavily in electric and electronic business having limited subsidies from the government and depending on foreign investment including foreign direct investment and joint ventures. However, it is difficult to deny that the economic rents were strong bases for the Chaebol's existence.

The 6-29 Declaration in 1986 was a sign of the declining authoritarian and developmental state. The growth of labour and civic power made it difficult for the Rho government to continue the preferential treatments for specific industries and firms. In addition, big business gained enough resources to survive independently and felt the government's intervention as an obstacle to its growth. That is, the relation between the

state and business developed from business's total reliance on the state, through a mutually dependent relationship, towards mutually independent relationship (Choi, 1999, pp.168-169).

Table 17 Growth of the Five Largest Chaebol: 1971-1988

The Chaebol	Total Assets (in KRW million ⁸⁹)			Average Annual Growth Rate of Total Assets (%)	
	1971	1980	1988	1971-1980	1971-1988
Hyundai	158,261	2,874,114	10,434,092	38.0%	27.9%
Samsung	415,978	1,901,127	10,227,008	18.4%	20.7%
Lucky-Gold Star	437,060	1,825,429	9,228,218	17.2%	19.7%
Daewoo	34,679	1,663,400	6,919,284	53.7%	36.6%
Ssangyoong	310,424	1,255,876	4,421,916	16.8%	16.9%

Note: Total Assets in 1980 constant KRW million

Source: Kim (1997a, pp.153/186)

Table 18 The Chaebol's Value Added in GDP in Non-financial Sectors

(Unit: %)							
Rank	1983	1984	1985	1986	1987	1988	1989
1 - 5	4.81	8.24	8.62	8.81	9.03	9.61	11.06
1 - 10	7.07	11.29	11.75	11.60	11.67	12.67	14.28
1 - 20	9.09	14.64	14.89	14.53	14.72	15.64	17.51
1 - 30	9.88	16.04	16.12	15.91	15.81	16.92	19.04

Note: The figures are calculated by extracting financial and insurance industries from the national GDP and the Chaebol's total value added.

Source: Jung and Yeom (1992, p.34)

As Table 17 shows, the Chaebol had grown conspicuously during the 1970s and the 1980s, increasing their assets by around 20% per year. As a result, the Chaebol became more and more influential in the national economy. To illustrate, the five largest Chaebol have significantly increased their weight in GDP in non-financial industries from 4.81% in 1983 to 11.06% in 1989 as shown in Table 18.

With the considerable decrease of governmental incentives, the increasing power of the Chaebol made it possible for them to develop other sources of finance. During the second half of the 1970s, private companies satisfied only 45.4% of their monetary needs from internal funds, equity and debt security. However, this share greatly

⁸⁹ The closing rate of December 1980 was KRW 1,575.85 per GBP.

increased to 68.6% in 1989. One noticeable phenomenon in the 1980s was the Chaebol's participation in non-bank financial sectors. For instance, Samsung diversified 44.9% of its assets to financial subsidiaries, while Daewoo and Hyundai diversified 38.7% and 24.8% respectively as of 1988 (Kim, 1997a, p.187). Their financial subsidiaries have provided a stable financial source to The Chaebol, whereas private firms' dependence on banks greatly lessened from 18.4% of total funds raised by the corporate sector in the late 1970s to 11.4% in 1989. The Chaebol heavily used non-bank financial institutions by increasing their borrowings from 10.5 to 16.0% during the same period (Shin, 2003, p.112).

Based on their increasing power, the Chaebol started raising their own voice against governmental policies. The Federation of Korean Industries, an association of large firms, stressed a market-centred economy and was against the state's artificial manipulation when the Chun regime propelled the heavy and chemical reorganisation (Shin, 2003, p.110). Furthermore, a Chaebol attempted to become a political force. Chung Joo-yong, the founder of Hyundai, organised a political party which won 31 seats in the National Assembly with 17.4% of the vote in 1992. He himself ran for president and gained 16.3%. He mentioned that his direct motive in running for president was the government's excessive intervention in business activities, especially by exemplifying his experience in the course of the government's reorganisation of the heavy and chemical industry in 1980. He continued:

There are limitations even if businessmen do their best. If the Korean economy would be sound, we should allow the businessmen to grow (their businesses) without constraints. So I decided (to run for president) (Yoon, 1992, p.19).

Chung Joo-yong was disappointed with the result of the presidential election, and abandoned his political will and party, partially due to the pressure from President-elect Kim Young-sam who won the election in 1993 (Lee, 1993, p.51). However, this event vividly showed that the Chaebol were not under the control of the government any more (Hwang, 1996, p.314).

6.5.5 E2-2: Growth of Labour Power

During the period of the authoritarian and developmental state, real wages were suppressed by an annual increase of 5.2%, even though labour productivity had grown by 11.2% per year between the 1960s and 1980s (Park, 1986, p.120). Moreover, the Korean labour force worked much longer hours than those of competing countries as shown in Table 19. The June Uprising and the 6·29 Declaration stimulated repressed labourers to make colossal labour movements. Labour disputes during 1987 were above 3,200, which was higher than the total disputes of 2,658 since the 1960s (Bae, 1995, p.161). The hottest issue of conflicts between the labour force and capital was the increase of wages, which shared more than 50% of the total disputes between 1987 and 1992 as shown in Figure 27. However, the labour movement went beyond the matter of wages and took on political and class characteristics (Bae, 1995, p.161, Lee et al., 1999, p.127). Radical and illegal labour demonstrations could not attract support from the middle classes recording illegal disputes of 91.1% in 1987 and 79.6% in 1988 (Lee and Kim, 1993, p.89). The middle classes feared the radicalism of labour movements and the instability of economic and political systems (Bae, 1995, p.161).

Despite the strong hand of the authoritarian government and the lack of interest of the middle classes, the labour leaders and the labour unions have grown as an influential actor in the processes of economic and political decision making since the middle of the 1980s as shown in Figure 28. The Federation of Korean Trade Unions, which was organised and protected by the authoritarian government, could not represent and lead workers and labour movements, but was criticised as a government-patronised organisation. The federal union attempted to change its identity and overcome its structural limitations by replacing its leaders and cooperating with labour leaders out of office (Lee and Kim, 1993, p.84).

More importantly, opposition organisations⁹⁰ against the federal union were created by company and/or industry-level unions. These associations formed the Korean Confederation of Trade Unions, a main competitor against the Federation of Korean Trade Unions, in 1995. The newly emerging labour force developed into a political

⁹⁰They are the Association of National Labour Movement Organisations in June 1988, the Association of National Trade Unions in January 1990 and the Association of Industrial Trade Unions' Federation in May 1990.

party by organising the Democratic Labour Party in 2000, which won ten seats in the National Assembly at the 17th general election in 2004.

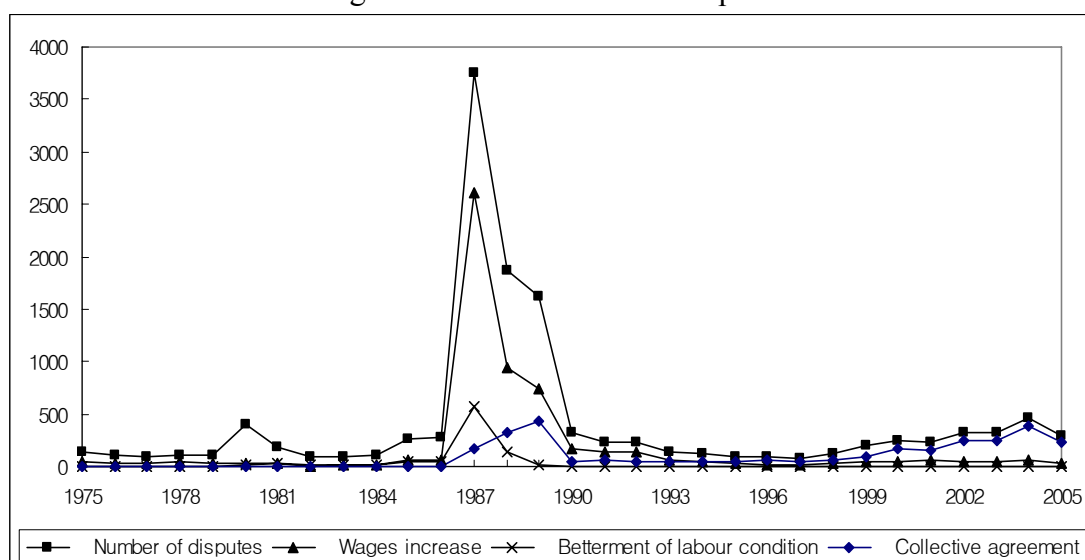
Table 19 International Comparison of Working Hours in Manufacturing

(Unit: hours per week)

	1965	1970	1975	1980	1982
South Korea	57.0	52.3	50.5	53.1	53.7
Japan	44.3	43.3	38.8	41.2	40.9
Singapore		48.7	48.4	48.6	-
Taiwan				50.9	48.4

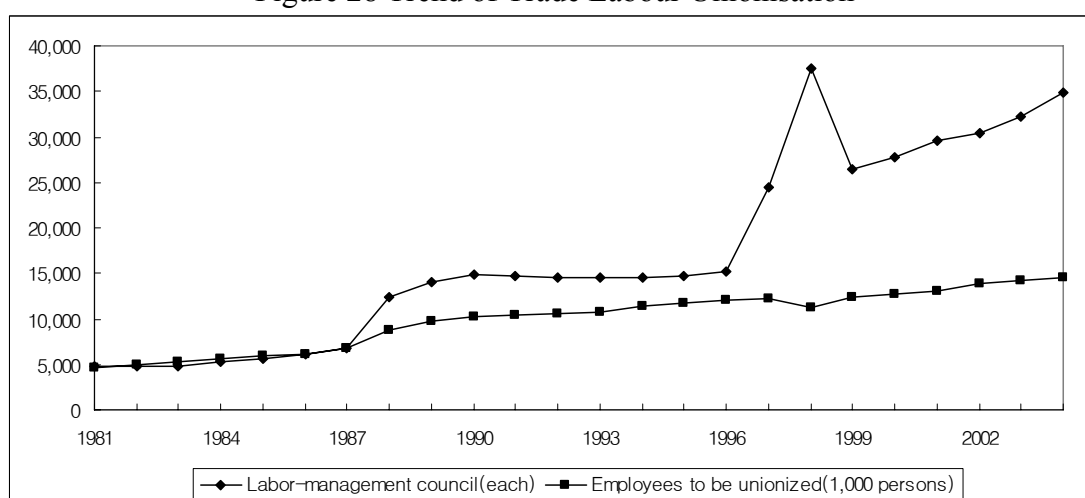
Source: Park, Hee (1986, p.121)

Figure 27 Trend of Labour Disputes



Source: Korea National Statistical Office (2006a)

Figure 28 Trend of Trade Labour Unionisation



Source Korea National Statistical Office (2006a)

In addition, after the IMF crisis, the Kim Dae-jung regime (1998-2003) recognised the labour power as an axis of economic decision making by establishing the Economic and Social Development Commission of Korea in 1998. Even though there have been significant tensions between the government, business and the labour force due to the government's inclination towards economic growth and global competitiveness of business, labour entered the policy making stage as a main actor.

6.5.6 E2-3: Birth of Environmental NGOs and Movement

In 1979, Korea enjoyed a short 'Seoul Spring' after more than 18 years of developmental and authoritarian regime even though it was quickly suppressed by another military regime. In this context, environmental NGOs were established by democratisation activists. The NGOs attributed the main cause of environmental pollution to unbalanced undemocratic economic policies led by the authoritarian regimes, and regarded the environmental movement as a democratisation activity (Jung, 2006a, p.67, Shin, 2006d). To illustrate, these NGOs named themselves by using a term 'pollution' rather than 'environment' in that the term 'pollution' easily allowed them to make a confrontation between victims (the public) and offenders (the authoritarian government and big business) (Shin, 2006c, Koo, 1996, pp.177-180). Consequently, the NGOs and the government had badly strained relations as Choi Yul, the founder of Korean Research Institute of Pollution Problems says:

A large number of (democratisation) activists played an important role in environmental NGOs. ... (We were) significantly oppressed by the Chun Doo-hwan regime. However, (we) maintained the environmental movement (Oh, 2007).

One of the representative environmental events in the 1980s was the 'Onsan Disease' event. Onsan is an adjacent area of the Ulsan Industrial Complex, where the Samsan Plain Contamination event occurred. The Onsan Industrial Complex⁹¹ was designated in 1974 and accommodated nonferrous metal producers such as KoreaZinc Company and Hyosung Aluminium co. from 1978. These factories were accused of discharging

⁹¹ Onsan Industrial Complex was constructed as a nonferrous metal industrial site. It has an area of 7,283km² where 247 companies operate as of 2007 (Korea Industrial Complex Corp., 2007).

harmful pollutants, causing economic damage such as damaging crops, killing shellfish, and health problems including skin disease and neuralgia since 1979 (Kim et al., 1994). An interview with a 38 year old woman taken by Choi Yul⁹² in 1983 vividly describes the severe situation as follows:

Though I am aching and picking a few (shellfish), we couldn't live without picking. What should I do? A child attending a primary school says (he or she feels) sharp pain in the joints and ill. Sir, I have lived long enough, so please save our children's lives (Shin, 2006f).

Residents damaged by industrial pollution initiated compensation movements. They focused on economic compensation and moving from polluted areas to newly established residential areas, but did not extend their interest to the environmental movement. They organised the 'Onsan-myeon Council for Moving to New Residential Areas' chaired by Lee Suk-jun on 23 October 1982. In January 1986, soon after the government determined a relocation and compensation plan, the council was replaced by two separate residents' organisations: the 'Onsan-myeon Council for Moving and Compensation' organised mainly by influential residents and the 'Moving Committee' established mainly by young men. This was because a main issue of the residents was changed to the amount and methods of compensation and residents had different interests depending on their economic and occupational status⁹³ (Koo, 1996, p.250).

A few environmental NGOs, which emerged from the late 1970s, carried out their own investigations, supported and organised anti-pollution and compensation movements, and mobilised the press. In particular, the participation of three environmental NGOs⁹⁴: the Korean Research Institute of Pollution Problems, Pollution Research Institute and Anti-pollution Movement Council (the predecessor of Youth Council for Anti-pollution Movement) contributed to making the event a national issue. The NGOs supported residents' movements, published several research reports, investigated and analysed

⁹² Choi Yul is the founder of the Korean Research Institute of Pollution Problems, one of the first environmental NGOs. This institute played an important role in environmental movements of Korea.

⁹³ Onsan-myeon Council for Moving and Compensation organised by influential and rich residents concentrated on the compensation of fishery rights while Moving Committee, unofficially established by young men, was against the activity of the council (Koo, 1996, p.250).

⁹⁴ Korean Research Institute of Pollution Problems, as an official organisation, coordinated and organised overall activities, the Pollution Research Institute carried out specialised analyses and the Anti-pollution Movement Council liaised with residents and their organisations (Koo, 1996, p.254).

Onsan disease, and mobilised the press. A news article of *Hankook-ilbo* (1985c, p.11) on 18 January 1985, attracted national attention to the Onsan event by designating Onsan disease as a pollution disease. It (1985c, p.11) reports:

About 500 residents in fishing villages in Onsan Industrial Complex suffer from unidentified disease feeling sharp pains in the arm, the leg and the waist. ... The disease is similar to early symptoms of itai-itai disease, a disease caused by cadmium poisoning which brought a big social problem in the 1950s in Japan.

The Korean Research Institute of Pollution Problems closely worked with the reporter of the news article, Kim Ju-un (Shin, 2006f). Many news reports and editorials followed. In particular, three major newspapers published editorials⁹⁵ on 14 March 1985, putting pressure on the government to take proper actions including epidemiology investigation and pollution control. Nonetheless, the environmental movement during this period concentrated on industrial pollution where victims and polluters were clearly classified rather than water contamination events mostly caused by many and unspecified persons.

In many cases, residents and environmental NGOs closely cooperated together. Nonetheless, it might not be possible to say that they formed a strong network in that they had different interests. The residents had a basic interest in economic compensation for their damage. The NGOs were mainly motivated by the ideology of democratisation in that they perceived environmental movements as a part of democratisation movements. Some reporters shared similar ideas with NGOs and the press played an important role in revealing the severity of environmental pollution. In general, the press changed their support depending on situations. In short, even if the Onsan event was successful in provoking national concerns and contributed to accumulating NGOs' capability, the residents failed to realise their requests about compensation and Onsan disease was not officially recognised as a pollution disease (Shin, 2006g).

6.5.7 E2-4: Strengthened Supply-oriented Governance

⁹⁵ *Hankook-ilbo* (1985a, p.2) titled "Something scarier than a mysterious disease: Onsan pollution would be removed if the government argued that there were no disease." *Donga-ilbo* (1985, p.2) named "A pollution disease, in case of Onsan." *Chosun-ilbo* (1985, p.2) published "Onsan disease, Itai, itai – a thorough investigation, cause-finding, and measurement required."

6.5.7.1 Water Supply as a means of Balanced Development and Social Welfare

1979 was a turning point of the Korean political economy. President Park Chung-hee was assassinated on 26 October 1979. Choi Kyu-hah, the prime minister of the Park regime, was elected as the new president on 6 December 1979. However, another junta, led by General Chun Doo-hwan, took over the government by force on 17 May 1980. The disproportionate development policy and HCI led by the Park regime caused severe economic and social gap between regions and classes, and over-investments in the heavy and chemical industry which were open to strident criticism by the Chun regime. Soaring oil prices in the international market imposed a heavy burden on the high-gear Korean economy. The debt/GNP ratio rapidly increased from 28.5% in 1978 to 53.5% in 1981, from USD1.1 billion to USD4.4 billion (Shin, 2003, p.105). The Chun regime chose stability, efficiency and balance as fundamental bases of economic policy and changed the FEDP into the Five-Year Economic and Social Development Plan (FESDP) by incorporating social developmental programmes.

However, the Chun regime did not make much progress in social policy except for the incremental enlargement of the coverage of the Medical Insurance Programme for industrial workers, even though it declared the 'construction of a welfare state' (Shin, 2003, p.118). Rather, the Chun government tried to expand infrastructure into underdeveloped regions as a policy for balanced national development. Reflecting the 5th FESDP, the focus of the 2nd CNTDP was on the proportionate development of the national land and the growth restraint of the capital region. During the 1980s, the south-west regions which had been neglected noticed many developmental projects, such as 88 Olympic motorway and Daebul and Gunjang industrial sites. Reflecting the aims of the 2nd CNTDP, the National Water Resources Plan (NWRP)⁹⁶ intended to provide equivalent progress for flood prevention and water supply. It targeted the increase of river improvement from 30% to 70% of the total length of national rivers⁹⁷, and the enlargement of water supply from multi-purpose dams from 3,314 million m³ to 12,753 m³ by 2001 (KWRA and Kwater, 1997). In this period, environmental pollution

⁹⁶ The NWRP was renamed from the National Water Resources Development Plan in 1981.

⁹⁷ Korea classifies rivers into national rivers, regional rivers, and small rivers. National rivers are improved by the central government and maintained by the regional governments. Regional rivers are managed by the regional governments: the metropolitan and provincial governments, while small rivers are managed by the local governments.

problems started being officially considered in the governmental plans. The 2nd CNTDP decided to increase the wastewater treatment rate to 30% of the population by 1991. The NWRP introduced the multi-regionalisation of water supply in order to secure clean raw water by moving water intake facilities to upper streams and to overcome the regional gap of water resources.

Table 20 The Increase of Water Supply and Road Length

	1971	1981	1991	2001	2005
Water Supply Rate	35.3%	57.0%	80.1%	87.8%	90.7%
Road Length (km)	40,635 (14%)	50,336 (34%)	58,088 (76%)	91,396 (76%)	102,060(76%)
- Motorway (km)	655 (100%)	1,245 (100%)	1,597 (100%)	2,636 (100%)	3,102 (100%)
- National road (km)	8,146 (28%)	12,247 (55%)	12,114 (92%)	14,253 (97%)	14,224 (97%)
- Local road (km)	31,834 (9%)	36,844 (25%)	44,377 (71%)	74,506 (72%)	85,101 (73%)

Note: Figures in the brackets are the paved rate of each road.

Source: Korea National Statistical Office (2007e)

Consequently, as shown in Table 20, the water supply rate reached 80.1% in 1991. 27,032 km of road was newly paved and 7,752 km was constructed between 1981 and 1991. In addition, every household could enjoy a landline telephony service in 1986 (IITA, 2008)⁹⁸ while being fully provided with electricity in 1980 (Korea Electric Power Corporation, 2007)⁹⁹.

6.5.7.2 One Voice from the Government

Even though a relatively independent environmental agency, the Environmental Administration¹⁰⁰, was established in 1980, it supported the idea of ‘development first’ and legitimised industrial activities including environmental pollution. This was mainly because the government still prioritised industries and the economy and suppressed diverse demands from the public. In this context, the EA was highly unlikely to have and raise its own voice. To illustrate, even if several studies had reported severe heavy metal contamination in Onsan area, the EA denied the possibility that Onsan disease

⁹⁸ IITA stands for Telecommunication Cyber History Museum.

⁹⁹ KEPSCO is the abbreviation of Korea Electric Power Corporation.

¹⁰⁰ The EA was an environmental agency which had some autonomy. But, the Minister of Health and Society has power to recommend the head of the EA to the president and to promote and dismiss higher civil servants of the EA. In addition, the EA could not enact enforcement rules by itself. This right belonged to the Minister of Health and Society.

could be a pollution disease (Kim et al., 1994). After a short epidemiologic investigation based on blood and urine tests between 25 March and 3 April 1985, the EA announced that Onsan residents had a lower concentration of heavy metal in their blood than the average, so Onsan disease could not be recognised as a pollution disease (Seoul-shinmun, 1985, p.11). Nonetheless, the government paradoxically decided to evacuate the residents in polluted villages to new residential areas and compensate them for moving in July 1984. However, the government's plan fell far short of the residents' expectations. The firms mostly discharged waste and wastewater rather than properly treating them because compensating residents' damage was much cheaper¹⁰¹ than constructing and operating waste (wastewater) treatment plants (Kim et al., 1994). The government and business formed a 'growth first' network which dominated decision making power. Consequently, the residents strongly rejected the government's plan, but their request was not granted (Koo, 1996, p.250).

6.5.7.3 Low Priority for Water Environment of NGOs

The environmental movement during the 1980s was closely related to the democratisation movement. This is because the environmental movement was rooted in societal transition resulting from democratisation events such as the 5.18 Democratic Uprising in 1980 and the June Uprising in 1987. Leading environmentalists attributed environmental pollution to the authoritarian state, monopolistic Chaebol and multinational companies (Koo, 1996, p.153). The focus of the environmental movement was on industrial pollution events including the cancellation event of Jinro alcohol factory construction in 1983, the 'Onsan Disease' event in the mid 1980s and seaweed contamination by Gwangyang (Iron) Works.

However, this period was dominated by issues about the realisation of economic distributional justice and political democratisation. The labour campaign and the democratisation movement captured public attention. The environmental movement was confined to compensation protests against polluting companies and/or the government,

¹⁰¹ A professor who investigated 'environmental pollution of Onsan Industrial Complex' says, "In the case of K factory, I estimate it costs five to six hundred million won per year to prevent pollution, but twenty to thirty million won per year are enough to compensate. With this money, (it can) buy their silence(Kim et al., 1994, cited from Gonghae Daechaek, 1988, p.71)."

but did not encourage the involvement of the public. Consequently, environmental issues were recognised as problems within specific areas and residents.

6.5.7.4 Organisational and Institutional Change

Even though the 1980s witnessed the uprising of democratisation and the labour movement and the birth of the environmental movement, it did not reach a comprehensive, balanced approach between development and environment, namely sustainable development, especially in the water sector. Environmental activists concentrated their resources on industrial pollution events in which polluters and victims were clearly clarified based on the perception that the anti-pollution movement was a way of the democratisation movement. Rather, the environmentalists were not against the expansion of water supply to underdeveloped areas even if the expansion included large dam construction to secure new water resources. In addition, governmental opinions were not differentiated despite the establishment of an independent environmental organisation. The government kept the growth first strategy and the influential power of the environmental organisation was not developed enough to compete with economic ministries. Rather, expansionists' approach for infrastructure was congruent with requests for social welfare policies. All of these events contributed to strengthening the supply-oriented governance.

A conspicuous change of governmental organisations during the 1980s was the establishment of an environmental organisation in 1980. Before the Environmental Administration was established as an independent environmental organisation in 1980, a governmental department taking charge of environmental conservation had remained on a small scale. It started from a sub-division, named Environmental Pollution Sub-division, of the Ministry of Health and Welfare in 1967, which was expanded into a division in 1973. However, the influence of the Environmental Administration was limited until the 1990s, when environmental crises happened and strong environmental movements occurred.

Increased concern about economic disparity forced the government to consider social welfare as a main agenda. One of the easiest ways to support balanced economic development and social welfare policies was to expand infrastructure to underdeveloped

regions and to construct new industrial sites in the regions. This is because other socio-economic policies such as wages, pensions, and health and labour insurance might place more burdens on the government and business. These developments focused on the south-west region, namely *Honam* region, which was significantly underdeveloped compared to the south-east region, called *Yeongnam* region. In fact, the economic gap between the two regions significantly influenced their political inclination. To illustrate, the well-developed Yeongnam region has shown conservative political propensity while the under-developed Honam region has revealed democratic political preference. The government more positively incorporated the construction of infrastructure and industrial sites within underdeveloped regions in the institutional framework. Consequently, the fifth and sixth FESDPs targeted balanced economic development and social welfare and propelled the infrastructure expansion and industrial complex construction in the underdeveloped regions. Subordinate plans such as the CNTDP and the NWRP supported the FESDPs as shown in Table 21.

Table 21 Institutional Change in the 1980s

Periods	Five-Year Economic and Social Development Plans (FESDP)	Comprehensive National Territorial Development Plans (CNTDP)	National Water Resources Plans (NWRP)
The 1980s	<p>The 5th FESDP (1982-1986)</p> <ul style="list-style-type: none"> - Social and economical stabilisation - Balanced development between regions and classes 	<p>The 2nd CNTDP (1982-1991)</p> <ul style="list-style-type: none"> - Expansion of developmental possibility into whole regions - Improvement of national living environment (living space) - Dam construction <ul style="list-style-type: none"> · 2 multi-purpose dams (Namgang, Hapcheon) · 3 middle-size dams - Water supply target: 80% of population - Sewerage target: 35% 	<p>NWRP (1981-2001)</p> <ul style="list-style-type: none"> - Dam construction for stable water supply: <ul style="list-style-type: none"> · 8 multi-purpose dams · 2 water supply dams · 2 estuary dams - River improvement for flood prevention from 30% to 70%
	<p>The 6th FESDP (1987-1991)</p> <ul style="list-style-type: none"> - Establishment of free, competitive market systems - Increase of quality of life and balanced development 		

6.6 Material and Purposive Actors in the Supply-oriented Governance

The above sections historically analysed the casual dynamics of events, actors and contexts for the development of the supply-oriented governance based on institutional

processualism. The strong state of which power was concentrated in the hands of a few political and bureaucratic elites expelled industrialisation during the 1960s and the 1970s. With a desperate economic context mainly caused by Japanese colonialism, the Korean War and the economic failure of the previous regime, industrialisation created supply-oriented governance in the Korean water sector. Strong challenges from business and social actors dismantled the strong state. As an easiest way of pursuing proportionate economic development and social equity, the supply oriented governance in the water sector was strengthened. As suggested in the analytical framework of this research (see Subsection 2.3.1), human action is motivated by both material incentives and purposive incentives (Moe, 1981, Jenkins-Smith et al., 1991). Actors in the supply oriented governance had tried to achieve their own interests and beliefs by formulating events, counteracting, responding to context, competing, and cooperating with other actors. This section analyses characteristics of actors, their drivers of action and their networks with others.

6.6.1 Material Actors and the development of a ‘Growth First’ Network

During the period of the state-led economy, political elites pursued ‘growth first’ policies in order to compensate their lack of legitimacy. Based on their dominant power and resources, political elites easily attracted big business to support their interests and manipulated labour elites to be government-friendly, at least until the mid 1980s. Bureaucrats with material incentives were also strong supporters for the policies of a strong state. These actors formed a strong network of ‘growth first’ because rapid economic growth tended to benefit all of them.

6.6.1.1 Political Elites

Political elites in Korea have been strongly incentivised by their own interests. With Japanese colonialism lasting 36 years, the division of the Korean peninsula and the Korean War made Korea socially, politically and economically unstable. Furthermore, these prior events with the Rhee’ regime’s failure in economy provided a good basis for the emergence of the authoritarian and developmental states. The Park regime from 1961 to 1979 and the Chun regime from 1981 to 1988 achieved power through military coups and maintained their hold using oppressive measures. As analysed in Subsection

6.4.3 and 6.5.1, in order to maintain the long-term seizure of power, the Park regime carried out the ‘October Revolution’ in 1972 and General Chun’s rebel force suppressed a civil uprising, called 5·18 Demonstration Uprising’ in 1980.

To legitimise their seizing and maintaining power by force, the authoritarian regimes devoted themselves to economic development. By organising developmental ministries such as EPB and establishing indicative plans like FEDPs, the regimes deeply and directly involved themselves in the development path (see Subsection 6.4.1). The regimes built and kept close relationships with big businesses because they perceived that the support of big business was critical to fast economic growth and allocating limited resources to a few large firms was the most efficient way (refer to Subsection 6.4.6.2). The regimes strictly controlled labour unions. For instance, the Park regime broke up all labour unions on 23 May 1961 and created a patronised union (Lee et al., 1999, p.120). Democratisation, labour and environment movements were suppressed by the strong state. As investigated in Subsection 6.5.3.1, the Chun regime merged and closed newspapers and broadcasters, discharged democratic academics from universities, and strictly regulated political activities. The public resisted the hard-line policies of the authoritarian regimes by actively participating in social movements and the regimes were defeated in elections. The responses from the public established a momentum for progress in Korea’s political, social and economic democracy.

6.6.1.2 Business Elites

Korea’s economy and industries seem to be characterised by the Chaebol, which have very strong material incentives. As analysed in Subsection 6.4.6 and Subsection 6.5.4, the Chaebol have survived and thrived by collaborating with and challenging the state. Under the authoritarian and developmental state from the Park regime to the Chun regime, the relationship between the state and the Chaebol is characterised as the Chaebol’s total reliance to the state (Choi, 1999, pp.155/159). Material incentives selectively and disproportionately allocated by the state were the most important resources to the Chaebol. The strongest incentive was policy loans with very low interest rates, mostly below inflation rates, with which the Chaebol used to expand and diversify their business areas. Consequently, the Chaebol had a high-gear financial

structure, which was the main cause of periodical economic crises including the IMF crisis, when the economic climate was unfavourable to Korea.

Paradoxically, the economic crises were good chances for the Chaebol to take off due to special measures, representatively the 8·3 Measure in 1997, to relieve the financial difficulties of the Chaebol. The preferential incentives to the Chaebol were burdened by the state, consequently by the public. Based on massive material incentives, the Chaebol gained enough resources to be independent from the state, as shown in Table 17 and Table 18, and started to challenge the state's interference. By entering non-bank financial sectors thanks to liberalisation and deregulation carried out by the Roh Tae-woo regime and the Kim Yong-sam regime, the Chaebol developed stable financial sources. Moreover, the Chaebol attempted to become a political force nominating a candidate to run for the presidency, even though it was a failure. The relation between the Chaebol and the state evolved from business's total reliance on the state, through a mutually dependent relations, toward mutually independent relations (Choi, 1999, pp.168-169).

6.6.1.3 Bureaucrats

Bureaucrats during the developmental period in Korea can be characterised as self-interested actors, though they tended to follow long-term career paths rather than short-term opportunism. Even in a recent survey conducted by an NGO, People's Solidarity for Participatory Democracy (2007) in 2006, after retirement, 80% of 289 high-ranking economic officials were employed by big business and financial institutions between 2000 and 2006. Nam Deok-woo, the 12th minister of EPB under the Park regime, mentioned that economic scholars played a role as members or advisors of the cabinet but were only technocrats who theoretically legitimised the policy directions of political leaders (Seo, 2007, p.57). Choi Han-yeol, a researcher of People's Solidarity for Participatory Democracy, was critical that economic bureaucrats did not suggest and implement economic policies based on their expertise and perspective, but instead acted in their own interests (Seo, 2007, p.59).

EPB was a main source for producing elite bureaucrats. For instance, seven out of twelve directors of the Planning Bureau in EPB became ministers of several ministries

between 1961 and 1982 (Kim, 1990c, p.102). This facilitated the coordination of policies and reduced conflicts between ministries (Kim, 1990c, p.102). Yet, Chang Ha-seong, a professor from Korea University, pointed out that under the Roh Moo-hyun regime, with the exception of two to three economic bureaucrats including the chairman of the Fair Trade Commission, most were composed of people from the Ministry of Finance and Economy (a descendant of EPB) and called it “Mofia” which was compounded from the words, ‘the Ministry of Finance and Economy’ and ‘Mafia’(Choi, 2003). In addition, informal networks based on alumni relations from elite universities were a bonding mechanism and information channel between high-ranking officials in EPB (Kim, 1990c, p.102).

Political elites strategically utilised bureaucrats to accomplish their political intentions. When President Park faced opposition from the economic bureaucrats from EPB against HCI, he excluded the economic bureaucrats and propelled HCI by establishing new institutions such as the Heavy and Chemical Industry Promotion Committee and the Heavy and Chemical Industry Planning Council (see Subsection 6.4.2). The institutions were mostly composed of technocrats from the Ministry of Commerce and Industry, and the Ministry of Finance. Nonetheless, ministries under the authoritarian and developmental state generally projected one voice based on the idea of ‘growth first’. In particular, the Environmental Administration supported fast economic and industrial development rather than preserving the environment and protecting the victims of pollution accidents as analysed in Subsection 6.5.7.2.

6.6.1.4 Labour Elites

Leaders of established labour unions had close relationships with political elites after Korea’s liberation from Japanese colonialism, at least until the Korean Confederation of Trade Unions was formed in 1995. During Japanese colonialism, socialists mainly directed the labour movements and attempted to establish a socialist government. They faced the oppression of the US military government and right-wingers after Korea’s liberation in 1945 (Ahn, 2008, pp.18-24, Lim, 2007, p.34). On 10 March 1946, under the support of the US military government, the right-wing party organised a labour union, *Daehandokrip Chokseong Nodong Chongyeonmaeng* in order to dismantle the left-wing’s labour union, *Joseon Nodongjohap Jeonguk Pyeonguihoi* (Ahn, 2008,

pp.24-26, Lim, 2007, pp.40-45). Politicians, whether they were rightists or leftists, officially participated in the labour unions as leaders. For instance, Korea's first president, Rhee Syng-man was involved in a right-wing union as the union's president until 1950 and Park Hun-yong, a leader of a left-wing party, was inducted as an honorary president of the left-wing union (Ahn, 2008, pp.24-26, Lim, 2007, pp.42/80).

This shows that the labour movements were highly politicised. The right-wing union became an unrivalled national union in South Korea under the Rhee Syng-man regime, and maintained its dominant power over labour movements, though it changed its shape several times, until one of its main competitors, the Korean Confederation of Trade Union, was created in 1995. The network between political elites and union leaders was dense under the authoritarian and developmental states. Under the Rhee regime, Chun Jin-han, the president of a right-wing union, was nominated the first minister of Society in August 1948. With the support of the ruling party, right-wing union leaders' participation in politics as members of the National Assembly has continued up to now.

The unions have reciprocally responded to the state by mainly supporting political and policy agendas. To illustrate, when the Rhee regime met the exorbitant demand for a parliamentary cabinet system in 1950, the right-wing union fiercely opposed the amendment of the Constitution for the system. The union announced that "because the amendment of the Constitution is opposed to people's opinion, we swear that we will make the president's heart comfortable by fighting against the amendment to the end according to people's will (Lim, 2007, p.213)."

The Park regime which came to power by way of the 5·16 Military Revolution dissolved labour unions and established a new right-wing labour union, called the Federation of Korean Trade Unions in 1961, which was the descendant of the right-wing union, *Daehandokrip Chokseong Nodong Chongyeonmaeng* (Lee, 2004, pp.102-103). The union also kept a patronised relation with the state. At the inaugural ceremony on 30 August 1961, the union praised the military revolution as "the promise of the eradication of every evil and corruption and of the prosperity of the nation and the people (Lee, 2004, p.153)." Whenever the Park regime was in trouble with political agendas, the union loyally supported the regime's agendas including 'the normalisation of diplomatic relations with Japan,' and 'constitutional amendment for President Park's

third term (Lee, 2004, p.154). The rewards have been the regime's political support for the union and its leaders, many of whom were provided with chances for political careers. Apparently, leaders of the established labour unions under the authoritarian and developmental state have been motivated by material incentives. Consequently, concerning 'growth first, distribution later' policies, political elites, bureaucrats, the Chaebol and labour elites had common interests and formed a strong network.

6.6.2 Purposive Actors and a Democratisation Network

The material actors and their 'growth first' network produced unbalanced political, social and economic structures. In most cases, voicing opposition was the only option for oppressed actors to break through the unfair structures. Voices from social actors have been generally raised for political democratisation and spread into labour and environment movements. Major events for political democratisation were the 1960 April Revolution, the 1979 Buma Uprising, the 5·18 Democratisation Uprising of 1980, and the Uprising in June 1987. These political events mostly brought short periods of freedom from the strong hand of the authoritarian state. Social movements, especially labour movements, burst during the periods. The environmental movement was recognised as a part of the democratisation movement and was ignited by pollution accidents, though it did not come to the forefront until the late 1970s. Students, labourers, religious groups, intellectuals, opposition political leaders, NGOs and citizens formed loose networks for political, social, economic democratisation though they might have had different incentives.

6.6.2.1 Students

Students were a leading purposive group. They were mostly in the front line of democratisation movements and attracted other actors' participation, in many cases, at the cost of their lives (Kim and Yoon, 2007, p.36). The April Revolution was initiated by about 800 high school students in Daegu on 28 February 1960 against the fraudulent presidential election¹⁰² by the Rhee Syng-man regime. The death of a high school

¹⁰² After failing to take two-third of the National Assembly seats in the 1958 general election, the Rhee regime tried every possible means to win the 1960 presidential election, which included bribing voters,

student, Lee, Han-yeol, in Masan, inflamed the revolution. More than ten thousand citizens participated in it. The agenda was changed from ‘a new presidential election’ to ‘the turnover of the regime’. A declaration of a student from Seoul National University characterised their demonstration that “storming out of the ivory tower to streets, we intend to sow the spirit of freedom of university in the barren soil of reality by forcing ourselves to participate in the turbulent history” (Korea Democracy Foundation, 2008, p.141).

Students from Busan University and Gyeongnam University started the ‘Buma Uprising’ in 1979 while students from Jeonnam University ignited the ‘5·18 Democratisation Uprising’ in 1980. During the ‘June Uprising’ in 1987, the death of a student from Seoul National University by torture became a seed of massive civil demonstration. Students’ democratisation activities were not limited to demonstrations, but developed debates about the ideologies of the democratisation movement and reformation of social structures (Kim and Yoon, 2007, p.37). The suicide event of Chun Tae-il, a tailor at Pyunghwa market, stimulated student activists to participate in the labour movement directly (Lee, 2004, p.402). Some entered firms as menial workers to incite labour unrest by concealing their highly educational backgrounds. Some opened informal evening schools where university students and young workers learnt and thought about social realities and contradictions beyond the basic studies of academic subjects. Others became labour activists. In addition, students kept close relationships with religious organisations such as Urban Industrial Mission as members or cooperators.

6.6.2.2 Religious Groups

The religious sector was the activity space of social movement including democratisation, labour and peasant movements until the late 1970s (Kim and Yoon, 2007, p.43). Religious groups perceived their industrial mission as ‘a natural response to the request of the God’ (Kim, 2009, p.167) and labour issues as the heart of democratisation movement (Lee, 2004, p.411). Moreover, the close networks of the

election obstruction, and open ballots (Korea Democracy Foundation, 2008, pp.94-101). Public officers, policemen, and even political hoodlums were at the forefront of the fraudulent election.

Protestant and Catholic churches with western countries restrained the authoritarian state from repressing churches' direct participation in social movements.

The Chun Tae-il event was a turning point for religious group's involvement in labour movements. Religious organisations started consciousness-raising education for workers. A Christian Academy led by Minister Kang Won-ryong educated labourers, farmers, youth and women. Its five day education programme was evaluated to increase social, political and community spirit (Lee, 2004, p.405). Urban Industrial Mission and Jeunesse Ouvnere Chretienne was a most active organisation. It was deeply involved in the major labour disputes of the 1970s which included strikes at YH Trade, *Daehyeop*, Union Magnetic and *Bando* Trade. During the democratic movement, the role of religious groups was also significant. To illustrate, a Christian church, *Jungbu* Church, was a centre for social movements during the second half of the 1970s in Busan. Church members including Minister Choi Sung-muk disseminated information and papers about the democratisation movement from Seoul to Busan. Members from the church organised 'Busan Cooperative for Good Books' where citizens read books for consciousness-raising, exchanged information, and discussed social and political issues. This became a source of nourishment for the democratisation movement, which ultimately lead to the *Buma* Uprising, in Busan.

6.6.2.3 Labourers

Labourers are basically motivated by material incentives. The major issues of labour disputes were wage increases and job security during the period of supply-oriented governance in Korea. However, labour elites in national unions dominated industrial and corporate levels of labour unions. These unions kept close relationships with the state and business and did not properly meet the needs of labourers. To break down the unbalanced structure of labour unions, the democratic labour movement arose. The democratic labour movement took an ideological character and was perceived as a way of Korea's democratisation (Lee, 2004, pp.419-421, Korea Democracy Foundation, 2008, p.15). The participation of students and religious groups strengthened this tendency.

After the April Revolution in 1960, the labour movement was mainly for the democratisation of labour relations (Korea Democracy Foundation, 2008, p.247). The first democratisation movement by a labour union occurred in Busan Harbour Labour Union which was chaired by Kim Ki-ok, the president of a national union, *Daehandokrip Chokseong Nodong Chongyeonmaeng* (Lim, 2007, p.375). Busan Harbour Labourers expelled existing union leaders and chose leaders of working units by an employee direct election (Korea Democracy Foundation, 2008, pp.241-242). Similar movements were launched by harbour labourers in Nokpo, Gunsan and Incheon, transportation employees in Daegu, and rail workers in Busan (Ahn, 2008, p.73).

The suicide of Chun Tae-il with burning gasoline in 1970 was a critical event in the history of Korea's labour movement. He tried to improve the working conditions of tailors at Pyunghwa market¹⁰³ continuously and intentionally¹⁰⁴. He seemed to be motivated by an altruistic incentive as he wrote that "How long have I hesitated and been tormented for this resolution? I made a firm decision at this moment. I have to go. I absolutely must go to my poor brothers, to the place in my heart, to childlike innocence at Pyunghwa market. ... I will abandon myself, kill myself and go. Be patient a little more. I will devote myself and not to leave you" (Lee, 2004, p.427). As analysed in Subsection 6.5.5, after the June Uprising in 1987, labour disputes significantly increased. Though a major issue was wage increases, the labour movement took on political and class characteristics (Bae, 1995, p.161, Lee et al., 1999, p.127).

In short, the undemocratic structure of labour unions, which was controlled by a few labour and political elites, set unfair wages for labourers and threatened job security. Therefore, the labour movement during the period of the state-led economy sought both democratisation of labour unions and the improvement of labour conditions.

6.6.2.4 Environmentalists

¹⁰³ Labourers at Pyunghwa market worked more than 14 hours a day in very small rooms and were paid KRW 1,000 a day which was cheaper than a cup of coffee (Korea Democracy Foundation, 2008, p.625).

¹⁰⁴ By becoming a master at a firm having significant power over young workers, Chun Tae-il intended to improve working conditions and to request just compensation to its owner. When he failed due to the power limitation of a master, he organised informal associations of workers at Pyunghwa market to investigate illegal working conditions and to request the improvement of the working conditions to the government. He was not able to overcome the strong barrier of 'growth first' network between business and the government. He chose an extreme way of demonstration, the death, on 13 November 1970.

Environmentalists under the strong state carried out environmental activities as part of the democratisation movement based on ideological incentives while victims of pollution accidents fought for economic compensation. As the pollution case of Samsan Plain shows, environmental activities until the 1970s were concentrated on victims' requests of compensation for their loss. Environmental NGOs started to be established by democratisation activists during a short Seoul Spring in 1979 just after the fall of the Park regime. As analysed in Subsection 6.5.6, the environmentalists believed that environmental pollution was the result of unbalanced undemocratic economic policies and that the environmental movement was a democratic activity (Jung, 2006a, p.67, Shin, 2006d). By using the term 'pollution' rather than environment, they intended to clarify the offenders, mainly large firms and the victims, the public (Shin, 2006c, Koo, 1996, pp.177-180). As in the case of 'Onsan Disease', environmental NGOs supported residents' compensation movement, carried out field investigations, publicised reports and mobilised the press.

Korea's labour, environment and democratisation movements were closely related each other. This is partly because the growth first network perceived the social movement as a big threat to itself and took a strong position against the movements, and social actors individually or collectively struggled to change the unbalanced economic, social and political structure created by the growth first network. However, it is not possible to say that they had a strong network because they worked together case by case and their relationship was less dense than that of the growth first network.

This section proved a proposition of this research about the existence of purposive actors who are motivated by purposive incentives, with material actors who are incentivised by economic interests. In the supply-oriented governance by the developmental state, material actors such as political leaders, businesses, bureaucrats and labour elites established a strong 'growth first' network. Though the supply-oriented governance under the dismantling strong state strengthened the power of a democratisation network, development-oriented actors still kept significant power and tried to mitigate strong pressure from the democratisation network by reinforcing the supply-oriented policies mainly for underdeveloped regions. Actors from the democratisation network were mainly motivated by purposive incentives. In many events, they risked their lives to realise their beliefs and ideologies. These interactions

between two networks, related actors, and responding context created and evolved the supply-oriented governance. The analytical framework in Chapter 2 developed a participatory map based on Pitelis and Sugden (1986), Pretty (1995) and Arnstein (1969). This participatory map applies to analyse the level of public participation in the supply-oriented governance in the next section.

6.7 Participation in the Supply-oriented Governance

According to a participatory map developed in Subsection 2.3.2, the participatory position of a certain case on the map may vary. This section classifies the interactions between and networks of related actors into political, economic, environmental, and water sector dimensions based on the perception that social actors might have different degrees of material or purposive incentives in each dimension.

Under the supply-oriented governance of Korea, political and economic issues attracted dense interaction among related actors and provoked social concerns. The social dimension was closely related to political and economic dimensions. Thus, decisions in the social dimension were largely congruent with decisions in the political or economic dimensions. This was because participation meant the devolvement of power from the powerful, mainly political, bureaucratic and economic elites, to the powerless, the public. The authoritarian regimes intentionally excluded social actors from strategic decisions whereas social actors struggled to gain access to the decision making process. Thus, this section investigates social issues with regards to the associated political and economic dimensions. Though the matters of the environment and water sector tended to be neglected, those are the main objects of this research. Therefore, those are separately considered in this section.

6.7.1 Political Dimension

The regimes during the supply-oriented governance has been characterised as both ‘authoritarian’ and ‘developmental’. The ‘authoritarian’ regimes dominated major political decisions, implemented the decisions with oppressive measures, and left little space for people to raise their voices. In the political dimension, strategic decisions

include choices about the allocation of political power, and the mechanisms of holding power and representation. Operational decisions can embrace the process of implementing strategic decisions and decisions made by subordinate political groups. Working decisions may refer to less empowered groups' decisions within the constraints of strategic and operational decisions.

At the strategic level of decision making, the authoritarian regimes utilised every means to seize and keep power (refer to Subsection 6.4.3 and 6.5.1). In order to strategically control the political decision making process in the National Assembly, the regimes conceived proportional representation systems. For instance, under the proportional representation system of the Chun regime, two-thirds of total proportional representation seats of 92, which shared 33% of the 276 seats in the National Assembly, were allocated to the winning party. This system generally allowed the ruling party to hold a majority. Moreover, the local assemblies were dissolved in 1961 and not restored until 1996. Consequently, the authoritarian regimes monopolised political power in both central and local governance as analysed in Subsection 6.4.6.4.

The strategic decisions in the political dimension were implemented by the harsh measures of the authoritarian regimes. They often used military power to suppress democratisation movements at the cost of ordinary people's lives (see Subsection 6.5.1 and 6.5.3.1). The central government directly and strictly controlled local governance (see Subsection 6.4.6.4). It allocated financial resources to the local governments, nominated local governors and intervened in the personal management of the local governments. The local governments competed to get more resources from the central government. Working decisions in the political dimension seemed to be open to the public. The head of a village was directly elected by villagers (Kim, 2002a, pp.212/218). However, their expected role under the developmental state was to disseminate and implement the orders of the central and regional governments effectively and efficiently (Kwak, 1970, p.222).

Demonstrations and voting were the only means for the public to respond against the undemocratic strategic decisions and oppressive implementation measures of the authoritarian regimes. These reactions became critical junctures in many cases, which redirected the flow of Korea's political history. To illustrate, the April Revolution in

1960 caused the collapse of the Rhee Syng-man regime, and the June Uprising of 1987 restored direct presidential elections by amending the Constitution. In addition, the public's votes against the ruling parties imposed significant repercussions on the development of Korean politics (see Subsection 6.4.3 and 6.5.3.1). When defeated in the 1971 election, the Park regime rather executed October Revolution by which it dissolved the National Assembly and revised the Constitution for its long-term seizure of power. The Chun regime's defeat in the 1985 general election led to the June Uprising and consequently the 6-29 Declaration.

In short, the public had no chance to participate in strategic decision making of the political dimension. Operational decisions seemed to be located near to nonparticipation because, though the regional and local governments might have some delegated powers to implement the predetermined goals and targets by the central government, the decision making process was closed to people. Working decisions at local levels were positioned in the level of tokenism. As illustrated, villagers organised an autonomous group, but implemented objectives and targets set by the central and regional government.

6.7.2 Economic Dimension

Korea, like Japan and Taiwan, has been often characterised as a state-led market economy. That is, the state directly and deeply engaged in Korea's economic development. Strategic decisions in the economic dimension may include choices of the direction of economic and industrial development and the allocation of scarce resources. Operational decisions are tactical economic and industrial issues, which embrace labour relations, concrete methods to allocate resources, and incentives to promote specific industries. Working decisions in this dimension seem to take into account applicable strategic and operational decisions into individual firms and villages.

The military regimes during the period of the state-led economy were immersed in economic development to legitimise their seizure of power by force. As a pinnacle of economic and industrial decision making, they established developing institutions such as EPB and indicative plans like FEDPs to direct Korea's economic and industrial development as investigated in Subsection 6.4.1 and 6.4.5.3. The regimes adopted

disproportionate development policies by directly allocating their resources to specific industries, firms and regions. To illustrate, Korea's political elites intended to promote big business as 'national champions' to compete with foreign transnational corporations like those in Japan (see Subsection 3.2.3, 6.4.6.2 and 6.5.4). These strategic decisions were made by the secret hands of a few political and bureaucratic elites (refer to Subsection 6.5.2.1).

In the operational level of decisions, Korea's political and economic elites oppressed labour movements in order to keep labour costs low. Furthermore, the political elites dissolved labour unions in 1961 and set up a government-patronised labour union (refer to Subsection 6.4.3 and 6.6.1.1). A few labour elites from the pro-government union had the chance to be national assemblymen (see Subsection 6.6.1.4). The allocation of government resources was selective and reciprocal. Large firms compliant with developmental policies had massive incentives from the state, but big business reluctant to follow them were sometimes harshly punished, like the bankruptcy case of Chaebol Kukje shows (refer to Subsection 6.4.6.2). The developmental state tended to adopt 'tokenism' policies for big business and a few labour elites in the operational level of decisions, but seldom allowed ordinary people to participate in the decision making process.

Working decisions in the economic dimension seemed to be open to people. A representative case was 'the New Village Movement in Factories'¹⁰⁵. The factory movement was initiated to overcome the first oil shock and to strengthen corporate competitiveness in 1973 (Chung, 1984, p.283). The central government directed each firm's operations for the movement by drawing up guidelines. To illustrate, it forced firms to combine the factory movement with quality control management, and to unify related departments by providing guidelines (Korea Association for Machinery Industry, 1982, pp.102-103). In addition, the central government utilised both normative and economic controls. It tried to inspire the devotion of workers to their firms by forming

¹⁰⁵ Whereas the original 'New Village Movement' in rural areas let villagers participate in operational decision making as briefly investigated in Subsection 2.3.2, the 'New Village Movement' in Factories had a more hierarchical structure and restricted factory workers to involvement in working level decisions.

an ideology of a common destiny between business elites and workers¹⁰⁶, and introduced a financial incentive system, called the ‘Incentive for New Village Movement’(Sin, 2003, p.356). Each factory worker was a member of a quality management team, generally called ‘the Team of New Village Movement,’ which was under the control of the ‘Committee of the New Village Movement’ established by individual firms. In addition, as the Chun Tae-il event shows (see Subsection 6.6.2.3), workers at SMEs were not able to choose their working conditions, but they might have limited discretionary powers, for instance, to increase productivity.

Labourers’ exclusion from the strategic and operational decision making process ignited extreme and massive labour movements such as the Chun Tae-il event and the labour disputes of 1987 (refer to Subsection 6.4.3 and 6.5.5). The disproportionate decision making structure in labour relations was closely related to the concentration of political and economic power (see Subsection 6.6.2.3). The movements sought both the democratisation of labour relations and the improvement of working conditions. Nonetheless labourers suffered from poor working conditions and undemocratic relationships with business elites.

To put it briefly, under the developmental state, the strategic and operational decision making process in the economic dimension seems to have been closed to the public. Only in the case of working level decisions, workers were allowed to participate for mostly efficiency purposes.

6.7.3 Environmental Dimension

A most important environmental issues is to keep a balance between economic growth and environmental conservation, namely sustainable development. Strategic decisions in environmental issues include choices about the weight of environmental policies, the formation of environmental institutions, and the allocation of financial and administrative resources. Operational decisions can be the rigidity of implementing the strategic decisions and the creation of environmental standards. Working decisions may consist of practical regulations based on the decisions of superiors, and the

¹⁰⁶ For instance, the central government developed catch phrases to increase normative incentives such as ‘Workers like Family,’ and ‘Industrial Warriors’ (Sin, 2003, p.356).

participatory mechanisms of local actors on local environmental issues within the constraints of the decisions made by the superiors.

The ‘growth first’ economic strategy of the developmental state inescapably resulted in environmental degradation and pollution. However, the state purposively neglected environmental matters (see Subsection 6.4.4 and 6.5.7.2). During the industrialisation period, environmental pollution was recognised as a good sign of fast economic growth. Ministries of the central government raised the same sentiments for the fast economic growth. Even the Environmental Agency supported the ‘first growth’ policy and tried to legitimise industrial pollution, as in the case of the ‘Onsan Disease’ shows (see Subsection 6.5.7.2). Rather, its role was limited within the levels of operation and working decisions such as the establishment of environmental standards and regulations on industrial pollution without a long term vision. In addition, the developmental state attempted to censor environmental information, to suppress the environmental movement, and to prevent environmental pollution cases from being national issues (see Subsection 6.4.4). In working decisions, the government was generous to industrial polluters. The public and social actors were excluded from gaining proper information and participating even in working decisions.

As analysed in Subsection 6.5.6, social actors recognised the anti-pollution movement as a way of political and economic democratisation. Environmental NGOs tried to form an anti-pollution network with the victims and the press. The environmentalists supported the compensation movements of the victims by investigating the causes and effects of industrial pollution. They often organised anti-pollution events to attract the concerns of the press and the public. Nonetheless, the environmental movement during the period of supply-oriented governance was not very influential mainly because most social actors were more focused on the democratisation of politics and economy. In sum, the position of the environmental dimension on the map of participation was closed to the public even in working decisions.

6.7.4 Water Sector Dimension

The evolution of the Korean water sector was significantly affected by the developmental path of the Korean economy. The state took an expansionist’s position

on water supply in order to support rapid industrialisation. Strategic decisions in the water sector include where the dams and water supply systems should be built and how much water should be delivered to whom, and at what price. Operational decisions are based on how to establish the facilities and by whom. Working decisions seem to be composed by the establishment and operation of local water and wastewater systems which were under the control of the local governments.

Strategic decisions in the water sector dimension were incorporated in indicative plans such as FEDPs, CNTDPs and NWRPs (refer to Subsection 6.4.5.3). Nonetheless, the formulation of the plans was controlled by a few political and bureaucratic leaders. They anticipated the supply and demand of strategic goods and services, set growth targets, selected regions for the industrialisation, and constructed infrastructure through the indicative plans. The central government not only determined the price of multi-regional water provided by the state-owned corporation, but also decided local water tariffs until 1992 when the authority of determining water tariff was devolved to the local governments (Moon, 1998, p.32, Kim, 1991, pp.133-134). The state established public corporations to provide infrastructure efficiently and effectively. Kwater is a state-owned corporation for water supply, which is under the direct control of the central government. That is, the powers of operational decision making are in the hands of a few political and bureaucratic leaders. Though the local governments have been in charge of local water and wastewater systems, due to the lack of financial resources, they depend heavily on the central government which allocated the resources (refer to an account of an ex-head of the Daejeon Metropolitan Water Authority in Subsection 6.4.5.1). Thus, the authority of the local governments was limited within locational priority in their localities and the physical operation of the local systems.

Environmental activists focused on industrial pollution events in which polluters and victims could be clearly identified on the perception that the anti-pollution movement was a part of the democratic movement. Moreover, social actors were not against the expansion of water supply systems while the Chun and Rho regimes chose the expansion of water and wastewater services as the easiest means to support social welfare policies (see Subsection 6.5.7.3 and 6.5.7.4). In the water sector dimension, due to the low priority of social actors and concentration of financial resources in the central government, only working decisions tended to be positioned on the level of tokenism.

This section identified diverse levels of public participation in three layers of decision making in the four dimensions of the supply-oriented governance on the participatory map. The most powerful actors in the state-led economy were the political elites. They took power by force. They dedicated themselves to ‘fast economic development’ and formed ‘a growth first network’ with business elites and bureaucrats. Sometimes, the dedication of the political leaders and business elites produced moving stories of overcoming extreme difficulties and achieving very fast economic growth, namely ‘the Miracle of the Han River’. The public suffered from absolute poverty for a very long period from Japanese colonialism to the Korean War. Thus, people were inspired by political leaders and followed their ideologies. The growth first network attempted to lead all the dimensions of Korea and to involve itself in the fine details of every level of the decision making process. Thus little space was left for the public to participate, even in working decisions. However, the growth first Korea produced significant strategic failures as analysed in Subsection 6.4.6. Diverse social actors constructed a democratisation network. The voices of society were the main means of the democratisation network, which included social movements and votes. When their voices were accumulated and gained strength, it became a critical juncture in Korea’s political, economic and social history and the decision making power was devolved from the powerful to the powerless. Nonetheless, under the state-led economy, the military regimes effectively kept decision making power and provided the public with a little room for working decisions to increase the efficiency of the growth first strategies.

6.8 Concluding Remarks

This chapter attempted to answer how and why the supply-oriented governance of the Korean water sector was formed and strengthened between the 1960s and the 1980s based on SDT and institutional processualism. Economic and industrial development has been mainly explained by dichotomies between the state and the market. However, whether the state or the market, the concentrated decision making structure of a few elites from the developmental state and the neo-liberal market cannot reflect the public’s interests, so they are vulnerable to failure, which are called ‘government failure’ and ‘market failure’ respectively. This research takes a perspective of governance, SDT, reflecting on the limitations of the developmental state perspective and the neo-classical

arguments. As a solution of prevailing failures, based on SDT, this research suggests democratic governance where ‘self-organising network’ creates and the unconstrained participation of the public realises

The developmental path of Korea is well explained by the theoretical proposition of this research. That is, the developmental and authoritarian regime led by President Park could be successful if its policies were congruent with the public interests during the early 1960s. The public, in absolute poverty, had strong wishes to overcome the situation. The regime, with the use of developmental policies, effectively ignited the desire and efforts of people to achieve economic growth. However, unbalanced economic policies deviated from diverse actors’ interests. They started to turn against these policies. This research does not postulate that the democratic governance is created by itself or by historical progress, but suggests that the formation of democratic governance is an outcome of a process where diverse actors compete and cooperate responding to and/or constrained by context.

The political leaders, the strongest actors in the supply-oriented governance, formed a growth first network with business elites, bureaucrats and patronised union leaders. Founded on political power and economic resources, they dominated every level of the decision making process and implemented them with oppressive measures. However, strategic failure led social actors to form a democratisation network. Due to a lack of power, resources, and by being excluded from the decision making process by the powerful, the democratisation network raised their voices mainly by means of demonstrations and votes. The social movements became critical junctures to progress the democratic governance of Korean politics, economy and society. Nonetheless, the participatory position of supply-oriented governance still remained nonparticipation in strategic and operational decisions and located between tokenism and nonparticipation even in the level of working decisions.

The water industry and its governance had been subjected to industrialisation and economic development policies before major water pollution events consecutively occurred. Water supply service infrastructure was provided to selected industrial areas and large cities with prices below the real costs. Under the developmental and authoritarian government led by President Park Chung-hee, the supply-oriented

governance was formed. The regime created a supply-oriented structure of institutions and organisations. Hierarchical national plans including the FEDP, the CNTDP and NWRP supported the supply-oriented governance and a specialised organisation, Kwater, implemented the policies. Social actors did not show much concern about the supply-oriented governance until the 1980s. Rather, proportionate economic policies and social welfare policies introduced in the 1980s strengthened the supply-oriented governance. This was because the expansion of infrastructure including water, electricity and roads to underdeveloped areas did not jeopardise their interests and social actors much as they concentrated their energy on realising economic equity and political democratisation. Nonetheless, events in the supply-oriented governance caused environmental degradation (L.E.1), the dismantlement of the strong state (L.E.2), and uneven water services and conflicts between regions (L.E.3) which became the prior events of the environment-oriented governance. With these events, the Phenol contamination episode in the Nakdong River and the cancellation episode of the Yeongwol Dam construction shaped the evolution of the environment-oriented governance of the Korean water sector. The next chapter discusses these dynamics.

Chapter 7 The Environmental Crises and the Korean Water Industry

7.1 Introduction

The aim of this chapter is to answer why and how environment-oriented governance was formed in the Korean water sector during the 1990s, to test what incentives motivate related actors, and to clarify how open the decision making process was to the public. Increasing concerns about the environment and existing needs for economic development require more inclusive, democratic governance in which diverse interests and purposes can be set against each other, negotiated and compromised. Externalities and collective action problems in conserving the environment make the democratic participation of citizens critical. This concept is based on strategic decision making perspectives and is in line with suggestions from sustainable development perspectives¹⁰⁷. For instance, the Brundtland report, 'Our Common Future'¹⁰⁸, (World Commission on Environment and Development, 1987, pp.5-6) suggests that 'citizen's participation in decision making and the democratization of international decision making' is essential to meet the basic needs of people and to secure equity between nations, classes and generations'.

Figure 29 shows the analytical framework of this chapter, which is formulated on the basis of institutional processualism. As analysed in Chapter Six, supply-oriented governance was formed to support growth first strategies between the 1960s and the 1970s, and strengthened by balanced development and social welfare policies in the 1980s. Even though the civil movement towards political democratisation and economic equity was progressive and the environmental movement was initiated in the 1980, their

¹⁰⁷ Sustainable development can be broadly classified into four perspectives, namely very strong, strong, weak and very weak perspectives, based on perceptions of substitutability between natural capital and other forms of capital including man-made capital (Dresner, 2002, pp.76-81, Baker, 2006, pp.29-35, O'Riordan and Voisey, 1998, pp.15-21).

¹⁰⁸ The term 'sustainable development' came into the public arena in 1980 when the International Union for the Conservation of Nature and Natural Resources presented the World Conservation Strategy (Davison, 2001, pp.11-12). However, its focus was rather limited, primarily addressing ecological sustainability, as opposed to linking sustainability to wider social and economic issues (Baker, 2006, p.18). It was the Brundtland report, 'Our Common Future' published by the World Commission on Environment and Development (1987), that explicitly linked social and environmental dimensions with economic growth. It defines sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, 1987, p.43). This report points out inequality between most developing countries and industrial countries as the planet's main 'environmental' and 'development' problem.

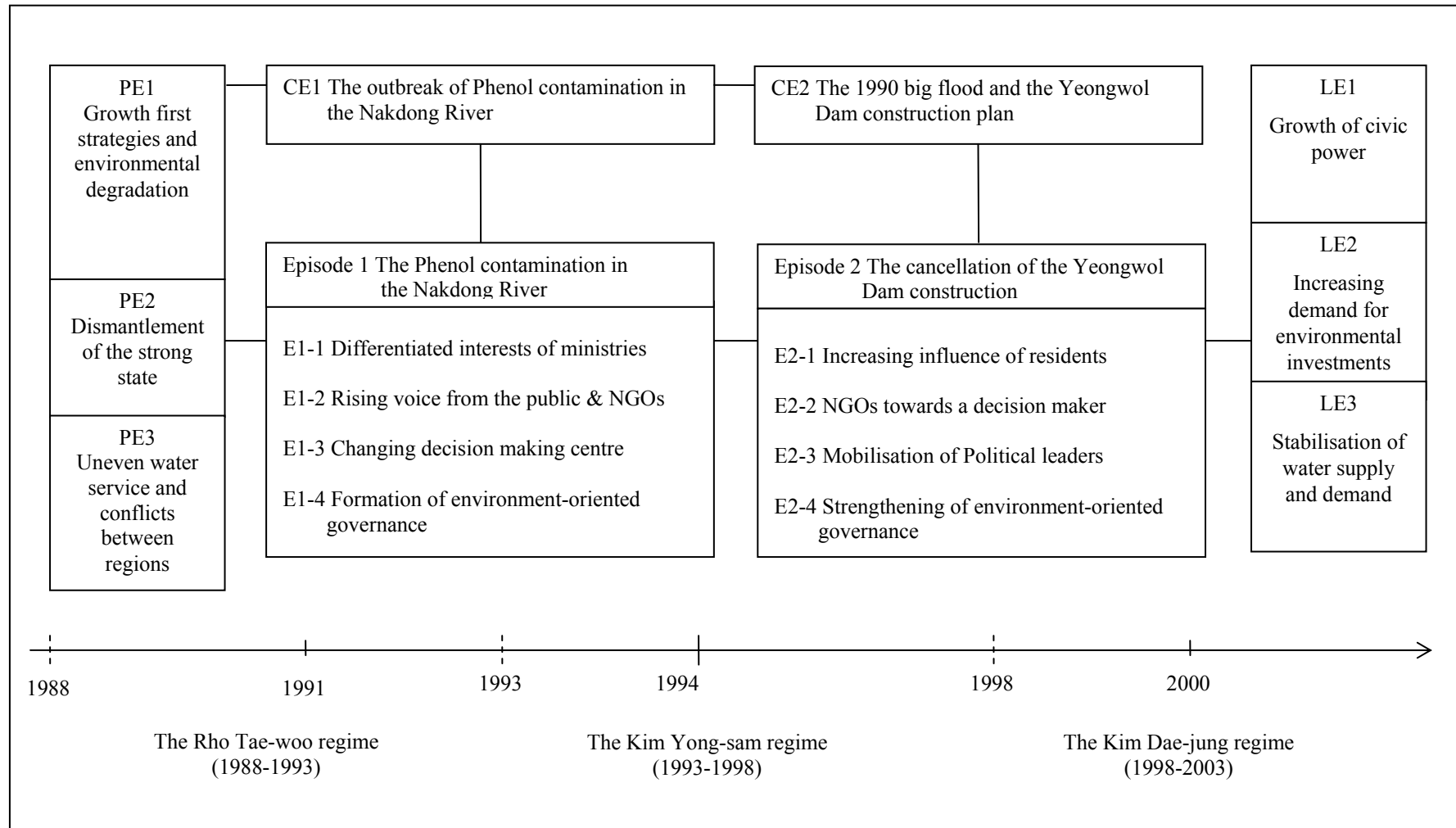
concern did not reach the water environment. As a result, the supply-oriented governance of the water industry did not meet a strong challenge until the late 1980s. Yet, rapid industrialisation and supply-oriented water governance degraded environmental quality and accumulated the potential for serious environmental accidents. Consequently, growth first strategies and environmental degradation (P.E.1) were a direct cause of the environment-oriented governance in the Korean water sector. In addition, mainly due to the growing power of various social and economic actors through economic development and political democratisation, the strong state started to be dismantled (P.E.2). The supply-oriented governance of the water industry kept water tariffs significantly under their costs. Yet, the fact that water infrastructures were concentrated in urban areas and industrial complexes caused an imbalance of water services between regions (P.E.3). These also became the foundation for governance change in the water industry during the 1990s.

Two environmental episodes in the 1990s: the Phenol contamination in the Nakdong River (Episode 1) and the cancellation of the Yeongwol Dam construction (Episode 2) brought about a significant change in the sectoral governance. The phenol contamination accidents in the Nakdong River in 1991 (C.E.1) caused the environmental concern of the public. This event directly impacted on the health of many residents living in affected areas and ignited strong protests against the polluting Chaebol, Doosan, the government and 'the growth first policy'. This event rendered more power to environmental actors including the ME and environmental NGOs and the public (E1-1, E1-2 and E1-3). The increasing concerns about the environment introduced institutional and organisational changes in the water sector (E1-4). While the phenol contamination event was an accident, the cancellation of the Yeongwol Dam construction was directly related to the intended activities of environmental NGOs. The Yeongwol Dam construction plan of the Ministry of Construction by utilising the 1990 big flood (C.E.2) initiated the second round of governance change in the Korean water sector. The collective action of residents having interest in the dam construction began to have influential power over policy making (E2-1). In particular, NGOs facilitated local and national environmental protests, provoked public attention by using the media, and succeeded in cancelling the dam's construction. During the process, NGOs' argument about environmental value started to be considered as a main factor for water projects (E2-2). Heightened public awareness of the dam construction mobilised

national and local politicians including the president, and national local assemblymen (E2-3). These events created and strengthened the environmental-oriented governance (E2-4). This dynamic process of forming the environment-oriented governance is analysed in Sections 7.2, 7.3 and 7.4. The contemporary events and events in the episodes resulted in the growth of civic power (L.E.1), the stabilisation of water supply and demand (L.E.2) and increasing demand for environmental investments. These later events became the prior events of the market-oriented governance. These events will be analysed in Subsection 8.2.

Section 7.5 identifies the purposive and material actors in the environment-oriented governance and investigates their forming of networks and intense interactions to realise their purposes and interests. From the perspective of SDT, these events in the developmental process of the environment-oriented governance have an important meaning because they allowed social and environmental actors to change the evolutionary path of the water sector and to participate in the decision making process of the water sector. That is, the decision making centre became diversified from a few developmental elites to multi-actors including the ME and NGOs. This research perceives that the diversification of the decision making centre was an outcome of intense interaction among actors and their response against context and events. The level of social actors' participation in decision making is the main issue of Section 7.6.

Figure 29 Analytical Framework of the Environment-oriented Case



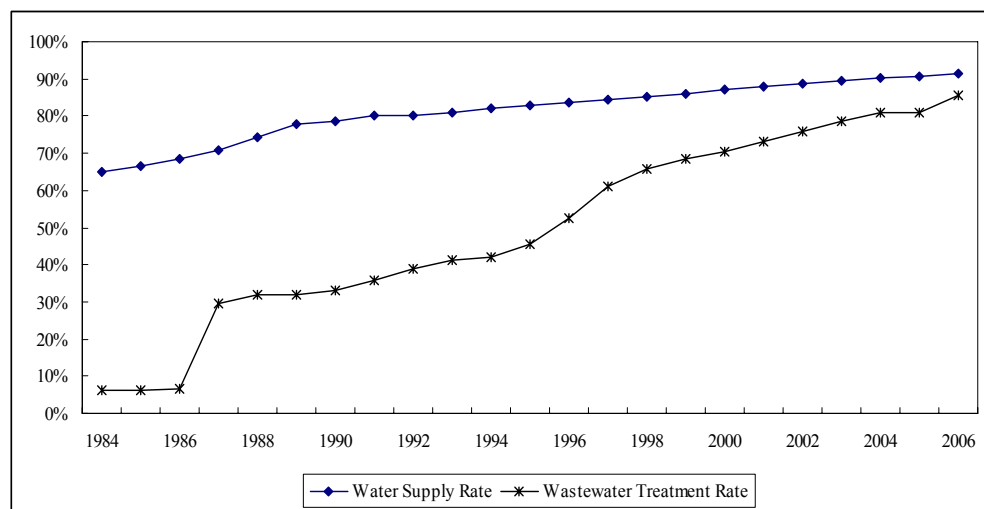
7.2 Prior Events

7.2.1 P.E.1: ‘Growth First Strategy’ and Environmental Degradation

7.2.1.1 Influence of the Growth First Strategy

The Korean economic development path did not only propel disproportionate investment between industries and regions, but also prioritised quantitative economic growth rather than distributional justice and environmental conservation. So the strategy can be summarised as ‘Growth first and distribution later, and Development first and conservation later’ (Koo, 1996, p.145). Consequently, environmental degradation followed. Chapter Five shows that environmental pollution significantly exceeded Korean environmental standards until the mid 1990s.

Figure 30 The Increasing Patterns of Water and Wastewater Services



Source: the ME (water and wastewater statistics, each year)

The supply-oriented governance prioritised water supply over wastewater treatment because water is a direct resource for rapid industrialisation and urbanisation. Figure 30 briefly shows the increasing pattern of water and wastewater services. The water supply rate¹⁰⁹ reached 64.6 per cent in 1984 and steadily increased to 91.3 per cent in 2006. In contrast, the sewage treatment rate¹¹⁰ was only 6.3 per cent in 1984, whereas it has

¹⁰⁹ The water supply rate refers to the ratio of people receiving tap water supply in the total population.

¹¹⁰ The sewage treatment rate refers to the ratio of people living in sewage-treated areas in the total population.

risen rapidly to 85.5 per cent since the early 1990s. The sharp increase of the sewage treatment rate in 1987 was due to the construction of the sewage treatment plants (STPs) in Seoul¹¹¹. The figure illustrates the disproportionate strategies which prioritised economic development rather than environmental conservation, at least until the late 1980s. This became a direct cause of consecutive water contamination accidents.

7.2.1.2 Consecutive Tap Water Contamination Accidents

The First Tap Water Upheaval: Heavy Metal Contamination

Heavy metal contamination of drinking water occurred in 1989 and was the first tap water pollution event of Korea. This event was publicised in Korea when a newspaper, *Kyunghyang-shinmun*, extracted a presidential report and published an article, 'Most tap water is contaminated' on 8 August 1989. The article (*Kyunghyang-shinmun*, 1989, p.1) disclosed that heavy metals were detected in 10 out of 10 water treatment plants (WTPs), and general and coliform bacteria were found in 9 out of 46 WTPs by an examination of the Ministry of Construction (a predecessor of the MLTM). The article pointed out improper sewage treatment as a main reason for the tap water contamination by illustrating that Gwangju Metropolitan city did not have any STP and Busan Metropolitan city treated only about 230,000 m³ in 930,000m³ of sewage per day. An expert involved in the examination said:

"At that time, (we) selected 10 WTPs from provinces and metropolitans. ... In order to report to President Rho Tae-woo on 8 August 1989, (we) took it to the Prime Minister's Office the day before. I don't know how *Kyunghyang-shinmun* gained the report, but the newspaper published it as a headline. ... And then, major newspapers like *Jungang*, *Joseon* and *Dongha* and broadcasters competitively revealed contamination events like a dead rat in a water tank. This brought big negative influence. And in 1990 and 1991, water contamination accidents continued. That was the big reason (of people's distrust in tap water)."

¹¹¹ The sharp increase of the sewerage service rate in 1987 resulted from the construction of three new waste water treatment plants and the enlargement of the existing plant in Seoul, the capital city. By increasing the capacity of 2,600 thousand m³ per day, the capacity of the sewerage plants of Seoul became 3,060 thousand m³ per day which was 57 per cent of the national capacity of 5,371 thousand m³ per day as of 1984.

The Second Tap Water Upheaval: Trihalomethane Contamination

The second tap water contamination event followed on 1 July 1990 when newspapers published a tap water quality inspection report of the Board of Audit and Inspection, which was submitted to the National Assembly. The report indicates that 8 out of 17 WTPs significantly exceeded the permissible amount of trihalomethane, a carcinogen¹¹² (Hankyoreh, 1990b, p.14). Unexpectedly, several WTPs of large cities including Seoul, the capital, and Busan, Daegu and Gwangju Metropolitans were in the list of the polluted plants. The Ministry of Health and Society, and Seoul city strongly refuted the report of the Board of Audit and Inspection by independently examining the same plants¹¹³. Subsequently, the Ministry of Health and Society reexamined the eight contaminated WTPs and reported a lower amount of trihalomethane than the water quality standard (Kim, 1990b, p.13). The debate seemed to finish by the Board of Audit and Inspection's announcing:

The difference (between trihalomethane examination results) of the Board of Audit and Inspection and the Ministry of Health and Society resulted from the differences of test methods and times. ... However, (people) can drink tap water without doubt because the recent result of the trihalomethane test of Ministry of Health and Society on the problematic plants shows that trihalomethane is lower than the standard (Kukmin-ilbo, 1990b, p.1).

However, the reoccurrence of tap water contamination events provoked bitter criticism from the press and deepened people's distrust of tap water.

¹¹² The Board of Audit and Inspection (Donga-ilbo, 1990, p.1) reported that Daesan water treatment plant in Euichang city recorded 0.49ppm (parts per million) of trihalomethane which was almost five times more than the trihalomethane permissible amount of 0.1ppm for tap water. Two times more trihalomethane than the permissible amount of trihalomethane was reported in five water treatment plants: Yeongdeungpo plant of Seoul, Hwamyeong plant of Busan, Dasa plant of Daegu, Gwanggyo plant of Suwon and Mongtan plant of Mokpo (Donga-ilbo, 1990, p.1). Yeongyeon plant of Gwangju showed 0.17ppm while Nampyeong plant of Naju indicated 0.15ppm (Donga-ilbo, 1990, p.1).

¹¹³ The MOHS (Kukmin-ilbo, 1990a, p.1) argued that it examined 206 water treatment plants including trihalomethane for a month after the Board of Audit and Inspection's examination in January 1990, but all plants were lower than the permissible amount and recorded 0.021ppm on average. In addition, Seoul (Kukmin-ilbo, 1990a, p.1) presented the claim that it has tested trihalomethane since March 1990, but trihalomethane has not been detected in all of nine water treatment plants.

7.2.2 P.E.2: The dismantlement of the Developmental State

As analysed in Subsection 6.7, though the authoritarian and developmental regimes strictly suppressed the involvement of the public in political, economic and social decision making, social actors continuously resisted the unjust decision making structure and tried to achieve democratisation. When their efforts were met by critical events, massive social movements burst out and the public participated and diverted the evolutionary path of Korea. The end of the Park regime in 1979 was indirectly induced by the labour dispute of YH trade and the Buma Uprising (see Subsection 6.4.3), but another military regime led by General Chun took power by force at the expense of 191 civilian lives on the 5·18 Democratisation Uprising.

One of the conspicuous responses of the public against the Chun Doo-hwan regime was the general election vote of 1985. (*see Subsection 6.5.3.1*). The ruling party's defeat provoked a massive democratisation movement, called the 'June Uprising'. In the early stages of the uprising, the Chun regime considered repressive measures. However, the regime decided to make President-candidate Rho Tae-woo a hero for political democratisation. Rho issued the '6·29 Declaration' and won the 1987 presidential election. However, the ruling party's defeat in the 1988 general election did not allow the Rho regime to protect the former president Chun (*refer to Subsection 6.5.3.2*). The National Assembly held a public hearing to investigate the Chun regime's illegal accumulation of wealth and the bloody suppression of the 5·18 Democratic Uprising. However, the unification of three parties: the ruling party and the second and the third opposition parties on 22 January, 1990, allowed the unified ruling party to take 218 out of 299 seats in the National Assembly in 1991 and effectively withstood the challenge from the public and opposition political leaders.

After Kim Young-sam, the former president of the second opposition party before the three parties were unified, was elected as the president of Korea. He also faced strong pressure from the public for the close investigation of the crimes of the Chun and Rho regimes. The Kim regime enacted a special law and accused the previous presidents. Finally, former President Chun was sentenced to death and former President Rho was condemned to twelve years in prison in 1996. Though they were given a special pardon by President Kim Yong-sam soon after the 1997 presidential election, these events

symbolically show the dismantling of the authoritarian government in Korea. The dismantlement of the authoritarian and developmental state was largely furthered by the democratisation movement, but it has also promoted the participation of the powerless in critical decision making. Therefore, it became a critical input for environment-oriented governance.

7.2.3 P.E.3: Uneven Water Services and Conflicts between Regions

The developmental state led by President Park from the 1960s to the 1970s implemented unbalanced economic policies. These policies resulted in severe economic and social gaps between regions and classes (see Subsection 5.3.3 and 6.5.7.1). These gaps generated intense pressure from social actors. The easiest way to respond to the pressure was through the expansion of infrastructure to the less developed regions. Consequently, the water supply rate reached 77.3 percent in 1990. However, the establishment of water supplies were still concentrated on urban regions while rural areas were still neglected. As of the end of 1990, only 27.8 percent of rural residents enjoyed sanitary water services as shown in Table 8. Furthermore, the national sewage treatment rate in 1990 was only 32.4 percent. Except for the four major metropolitans, Seoul, Busan, Daegu and Daejeon, the sewage treatment rates of other metropolitans and provinces were less than 20 percent (Ministry of Construction, 1991b, pp.180-181).

In most cases, dams were constructed in the upper stream of great rivers to provide water for, and to reduce flood damage to, large cities and industrial complexes in the middle and lower streams. Smaller municipalities where dams are typically located have suffered from the under development of their economies and society. These resulted in severe conflicts between the upper and lower regions of great rivers. A representative instance is the conflicts between Daegu and Busan which are located in the middle and lower streams of the Nakdong River respectively. Busan has strongly resisted Daegu's construction plan for an industrial complex because of the possibility of river water contamination in the middle stream. Another source of conflict is in the Han River which has continued to be a problem between Chuncheon and Seoul. Chuncheon is located in the upper stream of the Han River and has three large dams. Chuncheon perceived that the social and economic underdevelopment of the region has been caused by the dams and strict regulations for those in the Capital Region, including Seoul. As a

way of resisting these disproportionate developmental policies, Chuncheon has rejected the payment of water provided by the Soyanggang Dam. This disproportionate developmental policy was a direct cause for the cancellation of Yeongwol Dam's construction.

Table 22 Regional Difference of Water Supply as of 1990

Unit: 1,000 persons

	Population	Water Supplied Population	Supplied Rate (%)	Water Supply a Day (1,000 m ³)	Water Supply per Person a Day (ℓ)
Whole Country	43,520	33,631	77.3	12,421	369
Metropolises ¹⁾	20,679	20,152	97.4	8,600	427
Cities (Sis)	11,718	10,385	88.6	3,120	300
Rural Areas (Guns)	11,123	3,094	27.8	701	226

Note: 1) Metropolises include the Capital, Seoul, and five metropolises, but exclude other areas of the National Capital Region.

Source: The Ministry of Environment (ME, 1991)

7.3 Episode1: The Phenol Contamination in the Nakdong River

7.3.1 C.E.1: The Outbreak of Phenol Contamination in the Nakdong River

7.3.1.1 The Phenol Contamination Accident in the Nakdong River

The previous tap water contamination events did not directly damage people's health. In contrast, the Phenol event revealed severe risks of polluted water, causing a bad smell and damaging people's health, in particular pregnant women. This event occurred between 22:00 on the 14th and 06:00 on 15 March 1991, when the Gumi factory of Doosan Electro-Materials Co., Ltd. discharged 30 tons of phenol into the Okgye River located in the upper stream of the Nakdong River (Kukmin-ilbo, 1991, p.1). The polluted water reached two water supply sources of Daegu Metropolitan on 16 March. The phenol in the raw water was combined with chlorine and turned into chlorophenol in the process of water treatment (Donga-ilbo, 1991b, p.22). Consequently, tap water was contaminated by chlorophenol.

It was not recognised until many citizens complained about a bad smell in tap water to the Daegu water authority (Segye-ilbo, 1991b, p.5). The authority added more chlorine because it misunderstood that the smelly water was caused by decomposing matter (Donga-ilbo, 1991a, p.3). The authority spent five to six hours making a reagent because phenol was not included in the list of tap water quality tests, and detected the phenol in the polluted water at only 3:30am on 17 March (Segye-ilbo, 1991b, p.5). The authority finally announced that tap water quality was recovered on 21 March. However, a great number of people complained of physical suffering from diarrhoea and vomiting, while many pregnant women expressed their concerns about their embryos and foetuses. It invited an investigation by the Public Prosecutors' Office, and inflamed a political debate and civic environmental movements.

The Public Prosecutors' Office pronounced on 21 March that Doosan Electro-Materials Co., Ltd. had discharged 325 m³ of phenol since November 1990 (Hankook-ilbo, 1991a, p.23). The Public Prosecutors' Office arrested eight employees of Doosan and seven civil servants of the ME, and the ME imposed a 30 day shutdown on Doosan. Park Yong-gon, the president of the 14th largest Chaebol, Doosan, promised a donation of KRW 20 billion (GBP 14 million at the rate of December 1991) and full compensation for damage on 22 March. President Roh Tae-woo strongly criticised the behaviour of Doosan Electro-Materials Co., Ltd as 'an unforgivable crime which was anti-social and unethical' on 23 March 1991 (Lee, 1991b, p.1). Nonetheless, Doosan Electro-Materials Co., Ltd made the second phenol contamination event on 22 April 1991. This accident occurred because a company wanted to restart the operation quickly so did not properly repair the factory. This fuelled the anti-pollution movement.

7.3.1.2 Ceaseless Water Contamination Accidents

After the Phenol contamination event, small and medium water pollution accidents continued, such as the death of schools of fishes and the illegal discharge of wastewater. The ammonia pollution in the Nakdong River on 3 January 1994 had several cities including Busan Metropolitan, and Masan and Changwon suffer from a bad smell of tap water for more than ten days (Hankook-ilbo, 1994, p.27). A large number of citizens

depended on bottled water and ground water due to the bad smell. As a newspaper described:

Because of this smelly tap water upheaval, at springs in the (Busan) metropolitan including *Hwangyeongsan* and *Keumjeongsan*, citizens form long queues day and night. Bottled water goes off shelves like hot cakes (Kukmin-ilbo, 1994, p.19).

However, the source of the ammonia contamination was not clearly found despite prosecutor s' investigation. A prosecutor investigating the pollution event announced:

The pollution event was highly likely to be caused by the normal influx of excretions and living and industrial wastewater with the decrease of natural purification capability of the Nakdong River during the dry season (Hankook-ilbo, 1991b, p.31).

The biggest event of tap water contamination since the late 1990s might be the virus contaminations suggested by Kim Sang-jong¹¹⁴, a professor of Seoul National University. He examined the entero-virus contamination of tap water in 11 areas in Seoul and Incheon Metropolitans and reported two to ten objects in 1,000 liters of water to the Korean Association of Biological Sciences on 4 November 1997 (Munhwa-ilbo, 1997, p.29). The investigation attracted much attention from the press and provoked a debate between the ME and Seoul, and the professor. The ME refuted his proposition by saying:

Even if (we) accept the argument of Professor Kim, it is lower than the recommended standard of France that is no virus in 10 litres of tap water (Hankook-ilbo, 1997, p.37).

Professor Kim continuously investigated and reported virus contaminations of tap water between 1997 and 2000. The conflict reached a peak on 23 May 2000, when Seoul Metropolitan accused him of disseminating fallacies to the Public Prosecutors' Office. However, the ME investigated 55 out of 589 national WTPs and detected virus

¹¹⁴ Professor Kim Sang-jong has actively participated in the environmental movement since 1989 when he joined the Environment and Pollution Research Group, one of major environmental NGOs, as a founding member which was enlarged from Pollution Problem Institute. He investigated 'the Phenol Contamination Case' as a member of 'the Combined Investigation Commission on the Phenol Accident by Doosan Group (Shin, 2006e).

contaminations in some WTPs under capacities of 100,000m³ per day. The investigation indirectly supported Professor Kim's argument. For entero-virus contamination, even if the government and the professor still have a disagreement about the research methods, the virus debate seemed to diminish by the ME's setting a standard to monitor virus contamination and announcing a plan to establish automatic micro-organism detectors in all WTPs in 2002.

7.3.2 E1-1: The Differentiation of the Government's Interests

7.3.2.1 New Voice from the Government

As analysed in the Onsan event (refer to Subsection 6.5.6), ministries expressed one voice supporting the conventional economic development, at least until the early 1980s, despite the establishment of the EA in 1980. However, consecutive environmental accidents and pressures from the public had the government establish the ME by enlarging the EA in 1990. The ministry still had the idea of prioritising economic development rather than environmental conservation as the first Minister of Environment, Cho Kyung-sik, said at his inauguration ceremony:

(I will) transfer the foundation of environmental policy from environmental conservation restraining economic development to environmental policies encouraging growth potential in order to contribute to the second takeoff of national development (Seoul-shinmun, 1990a, p.2).

Nonetheless, it started challenging development-oriented ideas and economic ministries. The ME projected a new voice, 'the unification of water (quality) management'. The fragmentation of water (quality) management had been pointed out since the 1989 Comprehensive Plan for Clean Water Supply. The unification of water (quality) management gained broad support from the National Assembly, the press and the NGOs¹¹⁵. To illustrate, Assemblyman Lee Yong-cheol recommended in July 1990:

¹¹⁵ Ministries' attitudes to avoid responsibility for the pollution cases attracted the press's stern criticism against the structural fragmentation of water related ministries (Seoul-shinmun, 1990b, p.19, Kukmin-ilbo, 1990a, p.1).

To prevent tap water contamination, (we should) make a plan to unify the right of approving principal contaminators, such as golf courses, large entertainment facilities and cattle sheds, into the water quality management ministry (Hankook-ilbo, 1990b, p.3).

The ME took over the planning function of STPs and the designation right of water source preservation areas from the Ministry of Construction in December 1990. Furthermore, the ME's incorporation of the Water and Sewerage Bureau from the Ministry of Construction in May 1994 was a critical event of the Korean water governance. This implies that the ME is not only in charge of water quality management, but also involved in water quantity management. Integrated Water Resources Planning suggested in Agenda 21, an action plan of the UN for sustainable development (United Nations, 1992), strengthened the ME's position.

7.3.2.2 Ministries having Vested Interests

Until 1990 when the Framework Act of Environmental Policy was enacted, Korea did not have a comprehensive environmental plan. That is, environmental policies before the establishment of the ME were mainly to set up environmental standards and to regulate industrial pollution without a long term vision. As analysed in Chapter Six, from the 1960s to the mid 1980s, economic technocrats and political leaders who had a strong developmental idea dominated policy making. Their idea was deeply embedded even in environmental decision making. The '1982 Environmental Conservation' published by the Environmental Administration (1982, p.144) stated:

All national policies have prioritised economic development and (the government) did not have enough resources to consider environmental preservation.

The creation of an independent environmental ministry having its own vested interests and different views from economic ministries changed the evolution path of the Korean water sector. As of 1990, policies of water resources management were separately controlled by six ministries: the ME, the Ministry of Construction, the Ministry of Home Affairs (a predecessor of the MPAS), the Ministry of Health and Society, the Ministry of Agriculture and Fishery and the Ministry of Energy and Resources. The

main debates have usually concentrated on issues related to water and wastewater services, including preserving water quality and securing water quantity. Thus, the ministries taking charge of agricultural and generating water such as the Ministry of Agriculture and Fishery, and Ministry of Energy and Resources in 1990 have stood aside from the water debates. The Ministry of Construction and the ME have been the main competitors, while the Ministry of Health and Society went out of the debates in 1994 when the ME incorporated its work on tap water examination.

This research perceives ministries as self-interested actors who mostly take action depending on their own interests rather than beliefs and ideas. A founder of the Advocacy Coalition Framework, Hank C Jenkins-Smith, classifies policy coalitions into two types: purposive coalitions and material coalitions (Jenkins-Smith and Clair, 1993, p.151). In his research on the US policy of oil and gas exploration and development (Jenkins-Smith and Clair, 1993, p.151), he suggested that environmental groups as a type of purposive group are motivated by ideologies and beliefs, but business and their associations, a type of material group, are formed and maintained based on material interests, representatively profits. In his view, the government agencies were ‘quite mercurial’ between two types of coalitions depending on context: ‘relatively stable parameters’ and ‘external events’. However, in the case of the Korean water sector, most interviewers recognised that related ministries are still leading actors of certain networks by forming and maintaining the networks in order to achieve their own interests including, in many cases, the expansion of their organisations and power. To illustrate, an expert said:

Fundamentally, removing the function of dam construction (from the MLTM) might be impossible, (because it wants) to keep organisation and to secure and use budgets.

Another pointed out:

“The ME has propelled the privatisation policy to expand their domain.”

In fact, the ME has changed its perspective from a strong developmental view to a balancing view between the environment and the economy. As investigated, the EA (the predecessor of the ME) strongly supported heavy and chemical industries in the

‘Onsan Disease’ event by disregarding proper investigations and legitimising the heavy metal pollution. In contrast, when the Phenol event occurred, it imposed the cessation of work on Doosan twice, even if the first cessation was shortened by pressure from economic ministries. In the event of the Yeongwol Dam cancellation, it raised a stronger voice for the environment. Even if its ideas have changed according to context, the ministry has continuously pursued the enlargement of its organisation and the expansion of financial and legal power even by forming and modifying ideologies.

In contrast, the MLTM has been in a defensive position due to consecutive water pollution accidents and increasing concerns of the public about the environment. The ministry has adopted a strategy of the coordination of water resources management which emphasises ‘check and balance’ between water development and conservation. The debate on the way of water resources management is thoroughly analysed in the case of Yeongwol Dam cancellation.

7.3.3 E1-2: Rising Voice from the Public

7.3.3.1 The Growth of Environmental NGOs

The early environmental NGOs¹¹⁶ established between the late 1970s and the early 1980s were rooted in the democratisation movement in Korea, attributing environmental pollutions to authoritarian and developmental government and large business (Koo, 1996, pp.117-180, Shin, 2006d). By using the term, ‘pollution,’ in their names, the NGOs intended to distinguish polluters and victims, and draw clear confrontations between them (Shin, 2006c). They targeted industrial pollution events such as the ‘Onsan Disease’.

Whereas the industrial pollution events were mainly recognised as problems restricted within certain areas, water contamination events occurring from the late 1980s made people perceive pollution as their own risks. Political democratisation symbolised as the ‘6-29 Declaration’ in 1987 by President-candidate Roh Tae-woo of the ruling party

¹¹⁶ The early environmental NGOs include the Korean Research Institute of Pollution Problems, the Pollution Research Institute, the Anti-pollution Movement Council and the Yeongsan River Preservation Committee.

stimulated a civic movement, including ‘the formation of new environmental NGOs’¹¹⁷. These previous events had environmental NGOs gradually abandon the ideological anti-pollution movement and pursue more eco-centric views, such as strong or very strong sustainability.

The phenol contamination event triggered a massive civil movement which started from Daegu and spread all over the nation. Non-environmental NGOs and citizens led local movements against the phenol contamination. The ‘Citizens’ Conference against Daegu Potable Water Crisis was organised by seven NGOs such as Daegu Citizens’ Coalition for Economic Justice and Daegu Young Men’s Christian Association (Hankyoreh, 1991e, p.15). They organised several demonstrations, for instance, against an increase in the water tariff, and for compensation. The local movement not only occurred in Busan, Masan and Changwon which were directly impacted by the pollution, but also spread into unaffected cities such as Gwangju and Mokpo (Hankyoreh, 1991b, p.1).

Furthermore, national NGOs also contributed to making the phenol event a national issue. Ten national NGOs including Citizens’ Coalition for Economic Justice, Young Men’s Christian Association, Young Women’s Christian Association, Korean Anti-Pollution Movement Association established the ‘Civic Groups’ Conference against Phenol Contamination in Tap Water on 23 March in Seoul which attracted 23 more NGOs (Hankook-ilbo, 1991c, p.19). To attract public attention, the NGOs organised several events such as a goldfish experiment in phenol-contaminated water¹¹⁸. In addition, the conferences targeted buyers’ boycotts against products of Doosan, accusations against Doosan and the ME, the organisation of rallies, and investigation by a civic fact-finding committee (Hankyoreh, 1991e, p.15, Hankook-ilbo, 1991c, p.19).

¹¹⁷ The largest environmental NGO, the Korean Anti-pollution Movement Association (the predecessor of the Korea Federation for Environmental Movement) was founded in 1988 by unifying the Youth Council for Anti-pollution Movement, the Civic Movement Council for Anti-pollution (Gonghae Bandae Simin Wundong Hyeopuihoe) and some leaders from the Korean Research Institute of Pollution Problems. The Pollution Research Institute was enlarged to the Environment and Pollution Research Institute by engaging influential experts such as Professor Kim Jung-wuk and Kim Sang-jong. The Hansalrim and Baedal Environment Committee (the predecessor of Green Korean) having a strong ecological view were created. Furthermore, some large NGOs, such as the Korean Young Women’s Christian Association and the Citizens’ Coalition for Economic Justice, started to participate in the environmental movement.

¹¹⁸ The KAMA carried out the experiment to show people the toxicity of phenol on 21 March 1991. The press headlined the experiment. However, this experiment was unscientific in that it put two living goldfishes in phenol solution of 5ppm, the standard level of phenol discharge, although they would not survive in ordinary tap water (Shin, 2006a).

The phenol event played a significant role in changing the direction of environmental movements and increasing people's perception about the environment. The event influenced whole cities in the middle and lower stream of the Nakdong River and made million of people concerned. In addition, the event let non-environmental NGOs become actively involved in the environmental movement. To illustrate, the phenol event became the starting point of the Citizens' Coalition for Economic Justice's environmental movement. It established the Centre for Environment and Development as a division just after the 1992 Earth Summit. The centre developed into an independent, leading environmental NGO, the Citizens' Movement for Environmental Justice, in 1999. A leading environmentalist said:

Popularisation of the environmental movement in our country was due to the phenol contamination event of the Nakdong River. ... The perception of the environment in the phenol event was about humans, but through the Yeongwol Dam cancellation, the perception was expanded to the preservation of the ecosystem. In fact, including general citizens, ... two events were critical.

7.3.3.2 A New Pattern of Public Participation

Early environmental action was mainly carried out by environmental activists and victims. Yet, the phenol event led non-environmental NGOs and general citizens to actively participate in the environmental movement. The ways of the movement were diversified from compensations and demonstrations to boycotting and rejection of paying water tariffs.

A boycott movement against Doosan products such as beers and whiskeys suggested by NGOs drew enormous response from citizens as well as merchants. The Supermarket Cooperative Association, which consists of more than thirty thousand small and medium retailers, joined the boycott movement by declaring:

The phenol discharge event by Doosan is a terrifying life destruction event which resulted from the anti-social nature of the Chaebol for making profits. ... Supermarkets in

Yeongnam region already removed Doosan products from display stands and ... supermarkets in other regions will not display the products from 28th (Hankyoreh, 1991c, p.14).

In order to promote the boycott movement, 33 NGOs including Citizens' Coalition for Economic Justice and Korean Anti-Pollution Movement Association staged 'the Event of Pouring OB Beer'¹¹⁹ on 29 March 1991 in front of the head office of Doosan (Shin, 2006b). During the event, they poured OB Beer over the ground. The events attracted major newspapers and broadcasters successfully. However, the Fair Trade Commission ordered the association to stop the boycott on 17 May 1991 by saying that the boycott belonged to 'behaviours of collectively refusing the trade with a particular firm' (Donga-ilbo, 1991c, p.7). Even though the association attacked the Fair Trade Commission's decision and filed a formal objection, this was rejected by the Fair Trade Commission.

Nonetheless, the boycott movement was exceptionally successful due to citizens' active participation. A manager from the dairy product division of Doosan stated:

Recently, (residents living in) apartments and schools refuse Doosan's products. This causes severe damage. Until now the sales have dropped by around 20 per cent (Kyunghyang-shinmun, 1991, p.15).

In the case of beer, OB Beer of Doosan declined more sharply. The market share of OB Beer was 68 per cent before the phenol event, but it decreased to 44 per cent on 20 April 1991 (Donga-ilbo, 1991f, p.6). Even though sales of OB Beer recovered afterwards, its competitor, Crown Beer, developed and launched a new product, Hite, which was made of mineral spring water, in 1993. It placed heavy advertisements stressing the 'pure water' of its new product. Consequently, Crown Beer defeated OB Beer and took the first position in the beer market in 1996 (Shin, 2006b).

7.3.3.3 Bitter Resistance of the Victims

¹¹⁹ OB beer is one of the most popular products made by Doosan.

Direct damage to general citizens led victims to organise some rallies for compensation and/or against the countermeasures of Doosan and the government. A great number of people complained of physical suffering from diarrhoea and vomiting, among whom more than 13,000 people claimed damages against Doosan and government. Around 250 pregnant women who suffered from phenol contamination organised 'Daegu Pregnant Women's Meeting Damaged by Phenol' (Koo, 1996, pp.282-283). The meeting insisted that more than 20 pregnant women gave birth to handicapped babies and about 90 pregnant women induced abortions due to the fear of phenol damage (Segye-ilbo, 1991c, p.19, Donga-ilbo, 1991d, p.14). The dispute was settled by an arbitration of court in 1995 after the women's long and difficult struggle, which awarded compensation of KRW 140 million (GBP 8.6 million at the rate of December 1995) to the victims (Koo, 1996, p.283).

7.3.4 E1-3: Changing Decision Making Centre

Increasing economic growth and decreasing environmental quality began to change people's preferences. During the industrialisation periods up to the early 1980s, economic ministries dominated economic and environmental decision making. However, the phenol event with subsequent tap water pollution events allowed the environmental ministry and NGOs to have public support. In the Korean water sector, the external events granted significant resources to the ME¹²⁰. Environmental NGOs and the press supported the ME by arguing that the unification of water (quality) management was the best way to solve the pollution problems. However, they also had some tension because the ME had a more business-friendly idea than the NGOs acting against business and the press had a quite mercurial position between business and the environment.

A major resource of NGOs is the support from the public, so they try to make environmental pollution events national events. In the case of the phenol contamination, they successfully gained support although they could not participate in official decision making processes. Environmental NGOs started to leave the ideological view of

¹²⁰ The MOE gained organisational resources by becoming an independent ministry in 1990 and took over the Water and Sewerage Bureau from the MLTM in 1994. The MOE took financial resources by establishing the Water Use Levy and controlling the allocation of the central government's environmental grants to local governments. The MOE had legal resources by enacting and implementing several environmental laws such as the Framework Act of Environmental Policy, the Water Quality Conservation Act and the Water Act as well as by preparing several environmental plans.

political democratisation and people began to perceive environmental pollution as a daily life problem. This resulted in the increase of environmental NGOs and the expansion of the environmental movement. After the phenol event, more than one hundred environmental NGOs were created. Local NGOs targeting diverse activities such as city river restoration actively operated. Environmental NGOs and the ME formed a weak environmental network as analysed in Subsection 7.5.1.2.

Nonetheless, economic ministries and business still kept significant decision making power. Despite the harsh criticism from the president, the press, NGOs and the public in the initial stage of the episode, the electronic industry requested the government to lift the cessation of Doosan Electro-Materials. This argument was based on the reason that, without Doosan's producing PCB panels accounting for 85 to 90% of the domestic production, the industry could not work properly. So the Minister of Commerce and Industry said at a business conference:

Even if the company producing a social trouble ought to be punished, it is unreasonable for other companies not to be able to produce their product due to the punishment (Seoul-shinmun, 1991a, p.6).

Accordingly, Doosan filed a formal objection against the cessation order to the ME. The ME accepted the objection and allowed its re-operation on 8 April 1991. Han Su-saeng, the Vice Minister of Environment and the chairman of the Environmental Dispute Resolution Commission, stated after the commission:

If the cessation continues, an export decrease of USD 300,000 is expected. So we inevitably decided on the suspension of execution of the operational cessation (Hankyoreh, 1991a, p.14).

That is, a developmental network based on the close relation between business and the state still dominated economic and environmental decision making. The ME could play a role within that limitation. An environmental activist argued:

Even if the ME is the regulatory ministry, it intends to consider business circumstances much more. ... It seems to play a role like the Ministry of Commerce, Industry and Energy.

7.3.5 E1-4: Formation of Environment-oriented Governance

7.3.5.1 Towards the Unification of Water Management Functions

Since the late 1980s, the unification of water (quality) management has been argued as the best solution for the environmental degradation by the environmental network. The Rio Earth Summit strengthened the idea by proposing Integrated Water Resources Management in Agenda 21 in 1992. The environmental crises in Korea promoted the idea of the unification of water (quality) management by which the ME took over water quality management and water supply and sewerage policies, from the Ministry of Health and Society and the Ministry of Construction (a predecessor of the MLTM). In addition, the ME gained independent, lasting financial resources by establishing the Water Use Levy and controlling the environmental grants. The financial resources have allowed the ministry to form and implement its own strategies such as land purchase within 'Riverside Areas,' the construction of STPs in the upper stream of four great rivers, and the privatisation of the STPs and sewer networks. By enacting diverse environmental acts, the ministry realised several tools for unification of water (quality) management or Integrated Water Resources Management. Consequently, the environmental concerns made the ME become a major actor in the Korean water sector. Since the late 1980s, when tap water contamination events occurred, the ME has led major water policies such as the Water Management Plans and the privatisation of the water industry. Nonetheless, the environmental NGOs could not participate in official decision making processes until the late 1990s, when the Yeongwol Dam cancellation episode took place, even though the environmental movement widely spread into the public.

7.3.5.2 Establishing New Institutions to prevent Water Pollution

Water pollution had already been a serious social problem before tap water contamination began to occur. President Roh Tae-woo ordered the improvement of

water quality and countermeasures for the improvement several times¹²¹. Nonetheless, the first tap water contamination event took place in August 1989. This shocked people in that it broke people's belief in the safety of tap water. The event had the central government prepare the 'Comprehensive Plan for Clean Water Supply' which was announced on 1 September 1989 (Kyunghyang-shinmun, 1989, p.1). Despite the President's will and the water conservation plan, the second tap water contamination event broke out on 1 July 1990. 1991 experienced the most serious water pollution accident in Korean history, namely the Phenol contamination event. Ceaseless tap water contamination continued until the 2000s, and river water quality did not improve until the mid 1990s. Consequently, the Korean government continuously revised the Comprehensive Plan for Clean Water Supply and established the 'Improvement Plan for Water Quality Management' based on the four great rivers. These plans were replaced by the 'Comprehensive Water Management Plan' in 1996. The plan developed into River Basin Comprehensive Water Management Plans for the four great rivers in 1998.

These plans inevitably included the formation and distribution of basic resources for the ministries, such as budgets, legal authorities, and organisational and functional structures for which the related ministries compete. The plans broadly consisted of regulation, investment and finance, and organisational and functional structure. The regulations were mostly related to preventing land development in water catchment areas. An external effect resulting from the regulation has given rise to complications between economic development and environmental conservation. The designation of 'Counter Measure Areas' in Paldang and Daecheong Reservoirs was not achieved by the 1989 Comprehensive Plan for Clean Water Supply. This was because the developmental ministries and local governments in the affected areas resisted, even though the EA suggested it as a solution (Segye-ilbo, 1990, p.13). The second tap water pollution event allowed the Roh regime to overcome the conflict between ministries and

¹²¹ President Roh ordered the early solution of water contamination problems to the Minister of Construction in January 1989 and requested countermeasures of water quality improvement to the Prime Minister on 14 July 1989 (Prime Minister's Office, 1989, p.8). He ordered 'the movement of pollutant factories from water supply source areas' and 'periodic water quality tests and publications by specialised inspecting organisations' when the 1989 Comprehensive Plan for Clean Water Supply was reported to him in August 1989 (Kyunghyang-shinmun, 1989, p.1).

the opposition from the local governments about the designation of ‘Counter Measure Areas’ of 2,102 km² in Paldang area and 729km² in Daecheong area on 19 July 1990¹²².

The regulation against land development was strengthened by the Comprehensive Water Management Plans. ‘The Special Plan of the Han River Basin Water Quality Management including Paldang Reservoir etc.’ included the designation of ‘Riverside Area’, which strictly restricted land development and regulated the quality of effluent. In particular, ‘Riverside Areas’ within ‘Special Measure Area’ were planned to be purchased and established as green zones by the government. However, residents and local governments within or affected by ‘Riverside Areas’ strongly opposed the plan. For example, around 2,000 residents went to a public hearing for the Han River Comprehensive Water Management Plan and demonstrated against the plan on 25 August 1998. As a result, the public hearing was cancelled. Min Byeong-chae, the governor of Yangpyeong-gun¹²³ and the president of Eastern Governors’ Committee¹²⁴, said:

We will organise a large demonstration against the ME’s plan and for the dismissal of the Minister of Environment (Segye-ilbo, 1998, p.22).

As a result, the plan was revised to have the ME investigate the areas, where ‘Riverside Areas’ were planned, with residents and designate ‘Riverside Areas’ after consulting with provinces¹²⁵ (Kyunghyang-shinmun, 1998a, p.19).

A low budget hindered the investment projects in the water quality improvement plans including Comprehensive Plan for Clean Water Supply. The 1989 Comprehensive Plan for Clean Water Supply intended to raise the sewage treatment rate from 28 per cent in 1990 to 65 per cent in 1996 by investing KRW 2,137 billion (GBP 1,497 million at the rate of December 1996) for 84 STPs. However, the rate only reached 52.6 per cent in

¹²² Paldang Reservoir is a water source of the Capital Region while Daecheong reservoir is a water source of the Middle West of Korea including Daejeon Metropolitan and Cheongju city.

¹²³ Gun refers to county.

¹²⁴ The Eastern Governors’ Committee was organised by governors of ten local governments such as Gwangju, Yangpyeong and Icheon. Local governments located in the upper stream of the Han River consider the plan a serious threat as the chairman of Goseong Local Assembly says, “If the special plan designating (all) lands one km apart from both riversides as ‘Riverside Area’ passed, the living foundation of Gangwon Province would be collapsed (Kyunghyang-shinmun, 1998b, p.19).

¹²⁵ The initial plan intended to allow the MOE to designate ‘Riverside Areas’ by itself.

1996¹²⁶. This was because the ME could not secure enough money to subsidise STP construction due to ministries' competition for budgets (Kim, 1993, p.176). Small and medium local governments were reluctant to invest in STPs because of externality of STP investment and deficiency of funds. To overcome the limitation of budgets, the ME introduced two strategies: Water Use Levy and Privatisation. In 1998, the Han River Comprehensive Water Management Plan adopted the levy, which was designed to collect more than KRW 50 (GBP 0.025) per m³ from water consumers and to use it for STP construction and operation, land purchase within 'Riverside Areas,' and support to residents in the upper stream areas of the Han River. Privatisation of STP construction and operation was an important instrument to overcome the financial restriction¹²⁷. These instruments provided the ME with financial resources and legal authorities with which it could strengthen its role in the Korean water sector. Yet, securing water resources by constructing dams and developing multi-regional water supply systems still accounted for a large part of the 1996 Comprehensive Water Management Plan¹²⁸. That is, the Ministry of Construction and Ministry of Agriculture (a predecessor of the Ministry for Food, Agriculture, Forestry and Fishery) played a significant role in water management.

Environment-oriented actors like the ME, environmental NGOs and some experts have produced a discourse of water (quality) management unification based on the idea of integrated water resources management. The 1989 Comprehensive Plan for Clean Water Supply officially recognised that the functional dispersion of water resources management between several ministries was one of the main problems causing improper water pollution control (Prime Minister's Office, 1989, pp.10/13). The plan (1989, p.13) said:

¹²⁶ The central government subsidises 70 per cent of STP construction costs to small and medium local governments and 50 per cent to large cities.

¹²⁷ An expert deeply involved in the water sector privatisation strategy in an interview for this study said, "(The reason why the privatisation of the water sector was introduced is) the fund. Local governments requested a huge amount of budgets, but the funds were very limited even if the central government had to support them by the Local Grant Act. Furthermore, some local governments suffering financial shortage could not do despite the central government's grant"

¹²⁸ The 1996 Comprehensive Water Management Plan included new construction plans for 28 large and medium dams, 22 multi-regional water supply systems, and 7 industrial water supply systems and embraces KRW 26,520 billion (GBP 18.4 billion at the rate of December 1996) of investment plans for agricultural water (Prime Minister's Office, 1996, pp.138-143).

The construction and management of STPs are separated into the Ministry of Construction, the EA and local governments and the control and regulation of water quality are dispersed between the Ministry of Construction, the Ministry of Health and Society, the EA and local governments. As a result, to implement consistent and coordinated measures is difficult.

However, it still emphasised the ‘coordination’ of water management functions rather than their ‘integration’.

The ME started to suggest the unification officially. The ‘Coordinated Comprehensive Plan for Clean Water Supply’ reported by the ME (1992, p.93) proposed the integration of sewerage policies from the MLTM to the ME. The Water Quality Improvement Measures (1994, p.54) advocated that the ME should integrate water quality management functions by taking over policies for the establishment and supervision of water quality standard from the Ministry of Health and Society, and the Ministry of Construction must control the function of water quantity management. The Han River Comprehensive Water Management Plan (Korean Government, 1998, p.234) included the establishment of ‘The Han River Basin Management Committee’. The committee was chaired by the Minister of Environment and composed of governors of metropolitans and provinces and presidents of Kwater and the Korea Electric Power Corporation¹²⁹. Even though the committee mainly deals with water quality related issues such as the use of the Water Use Levy, the committee and the ME are highly likely to lead water policies related to integrated river basin management.

As analysed in Section 7.3, the Phenol contamination episode was a critical juncture which significantly altered the evolutionary path of the Korean water sector from the supply-oriented governance to the environment-oriented governance. However, the public were outside the strategic decision making process. Yet, the cancellation episode of the Yeongwol Dam construction further progressed the environment-oriented governance. The next section analyses this process.

¹²⁹ The members of the committee were changed by the revision of the Act of the Han River Water Quality Improvement and Residents Support etc. in August 2007. The committee is chaired by the Vice Minister of Environment and composed of vice governors of metropolitans and provinces, the president of Kwater, a high ranking official of the MLTM and a director of KEPCO.

7.4 Episode2: The Cancellation Episode of the Yeongwol Dam Construction

7.4.1 C.E.2: The 1990 Big Flood and the Yeongwol Dam Construction Plan

As analysed in Chapter Five, Korea suffers from an increasing variation of rainfall between seasons and an enlarging concentration of economy and population in the Capital Region. 1990 experienced a big flood in the Han River basin. In only three days from 9 to 12 September, 581mm of rain fell in Icheon, 529mm in Suwon and 508mm in Hongcheon¹³⁰ (Ministry of Construction, 1991a, p.33). The flood harmed 120 persons (78 dead, 12 injured, and 30 missing) and caused the loss of KRW 396 billion (GBP 287 million at the rate of December 1990) of properties. In particular, Yeongwol and Danyang, the most seriously damaged areas¹³¹, witnessed the submersion of their whole city centres. 64 residents of Samok2-ri in Yeongwol were caught in the flood. Jung Ok-ryun, a resident, said:

At that time, we thought all of us would die. When a landline connecting us to outside died out, (we became) more hopeless. All of us trembled with the fear of coming death. Around 2 o'clock in the early morning, miraculously rain stopped and stars shined (Hankyoreh, 1990a, p.14).

The flood had the press support the large dam construction policy. To illustrate, Seoul-shinmun (1990c, p.3) argued:

Dams in the Han River Basin greatly reduced the flood damage by exercising their flood control function. ... for the effective use of precious water, ... containing water by constructing dams is the best way.

Hankook-ilbo (1990a, p.2) suggested:

¹³⁰ The annual precipitation in the central part of Korea ranges from 1,100 to 1,400mm. The national rainfall of 1990 was 1,611.7mm. Therefore, only in three days, Icheon had 36 per cent of the 1991 annual rainfall.

¹³¹ The property loss of Yeongwol was KRW 30billion and that of Danyang was KRW 38billion.

Due to the poor progress of the construction of multi-purpose dams, in a few years, the eras of water shortage will not only arrive, but the flood like this year will be also repeated.

Accordingly, the Ministry of Construction announced a plan for the Yeongwol Dam construction on 8 October 1990. The dam construction plan was reflected in the Third CNTDP in 1991. The Yeongwol Dam planned to control 200 million m³ of flooding and supply 367 million m³ of water (Kang, 1998, p.11). The expected reservoir basin which would be submerged by the dam construction would be 21.9km². 521 households and 1,820 residents in three guns (counties) were estimated to be evacuated. The feasibility study on the Yeongwol Dam construction was carried out from 28 December 1990 to 10 July 1992.

7.4.2 E2-1: Increasing Influence of Residents

Two rivers, the Dong River and the Seo River, flow from Jeongseon-gun and Pyeongchang-gun and meet in Yeongwol-gun. This geographical condition often results in inundation. According to locations where residents lived, their interests about the dam construction were divergent. Residents of Yeongwol-gun generally accepted the dam construction, whereas residents of Jeongseon-gun mostly rejected it. This was mainly because Yeongwol-gun expected that the dam construction would prevent repeating floods¹³² and revitalise the local economy, whereas Jeongseon-gun perceived that the dam would increase the possibility of inundation¹³³ (Chung, 2001b, p.242). In fact, residents of Jeongseon-gun have experienced several floods resulting from its topographical condition¹³⁴ which produced backflows. In contrast, residents of Yeongwol-gun had opposite experiences. The Cooperative of the Yeongwol

¹³² According to Choi and Hong (2002, pp.9-10), 'Association for Yeongwol-gun Development' held the first conference on the Yeongwol Dam construction on 12 September 1991, where the council gave their support to the construction. Several social groups including Yeongwol-eup Prosperity Association organised a signature campaign for the dam construction on 14 August 1993 in which around 14,000 residents participated.

¹³³ Yeongwol-gun is located in the lower stream of the planned dam, so the dam might effectively control the flood and most residents living in lower area would move to new residential villages. However, Jeongseon-gun located in the upper stream of the dam could worry about flood because when the 1990 big flood in the Han River Basin took place, the government tried to contain as much as water to protect the Capital Region from the flood. Consequently, Danyang-gun located in the upper stream of Chungju Dam experienced severe damage.

¹³⁴ The county is surrounded by a river, the Joyang River running through narrow gorges within a large mountain range.

Shopkeepers and diverse social organisations organised a signature-seeking campaign which attracted 14,000 people (Choi and Hong, 2002, pp.9-10). In contrast, 3,459 residents of Jeongseon-gun signed a petition against the dam construction during a campaign against the Yeongwol Dam construction in 1993 (Choi and Hong, 2002, p.12).

However, a critical event occurred in 1994. The MLTM granted the construction of Janggok water intake facility to Jecheon City in Pyeongchang River, which is located between Jecheon city and Yeongwol-gun. Some of Yeongwol's residents strongly resisted the approval because the water intake facility would be accompanied by the reduction of water flow, negative environmental impacts down stream and land development regulation to protect the drinking water source for the other region's prosperity (Choi and Hong, 2002, p.10, Chung, 2001b, p.244). Some Yeongwol residents started to see the Yeongwol Dam construction from the perspective of the event. The University Students' Association from Yeongwol and the People Loving Yeongwol¹³⁵ were in the forefront of the dam cancellation movement. They conceived that the dam would be constructed to supply water to and control flooding for the Capital Region (Kang, 2005, p.122). They also raised questions about the safety of the planned dam. The expected reservoir area is composed of limestone, which made a number of caves. Their fear was embedded in the saying that 'If cave water bursts out, Yeongwol would be demolished' which has been said for a long time.

The 1997 revision of the 'Act on Special Cases Concerning the Acquisition of Lands for Public Use and the Compensation for their Loss' changed the attitude of the residents in the evacuation area. The act aimed to prevent overcompensation of farming rights by changing the compensation basis from crops presently cultivated to crops cultivated for the most recent three years. This was because the government experienced severe speculative farming in the Yongdam Dam construction area where the residents having lands within the reservoir area planted cash crops. The revision of the act was critical for the farmers of the Yeongwol Dam area since they benchmarked the Yongdam Dam event and raised large loans to plant cash crops. In fact, the dam construction plan announced in 1990 prevented the farmers from accessing governmental subsidies such

¹³⁵ 'People loving Yeongwol' was the former organisation of 'Resistance Committee for the Cancellation of Yeongwol Dam,' one of the most influential residence organisation against the dam construction.

as farming loans with low interest rates and farming road construction. The financial status of the farmers had significantly worsened. Accordingly, the farmers strongly resisted the Act and the dam construction.

The establishment of the Yeongwol Dam Construction Office of Kwater and the designation of the expected reservoir areas in 1997 had the residents feel the dam construction as an impending fact and let national NGOs pay attention to the Yeongwol Dam construction. To illustrate, the Resistance Committee for the Cancellation of the Yeongwol Dam¹³⁶ founded on 14 April 1998 started to play an important role. It organised 'a campaign to obtain 10,000 signatures' on 25 April 1998 and held a demonstration with 40 social groups in May 1998 (Choi and Hong, 2002, p.11). The participation of national NGOs made the event a significant environmental and ecological issue. Both groups started to closely work together. Therefore, the dam construction became an issue of dam safety and ecological conservation. In this context, the MLTM and Kwater held a public hearing to explain a draft of environmental impact assessment and collect residents' opinions. Local social groups argued that the draft lacked appropriate measures to secure the safety of residents and the dam. They criticised that the public hearing was only a means to justify the dam construction. Consequently, the opinion of residents of Yeongwol and Jeongseon rapidly converged to the rejection of the dam construction after 1997.

7.4.3 E2-2: NGOs towards a Decision Maker from a Peripheral Actor

Before the Yeongwol Dam episode, environmental accidents were the main bases of environmental movements as analysed in the events of 'Onsan Disease' and 'Phenol Contamination'. Despite NGOs' significant influence on the balance between economic development and environmental conservation, their role was confined to raising voices outside the decision making process. On the other hand, the cancellation of Yeongwol Dam was an intentional event led by social actors and provided a basis for NGOs' direct participation in the decision making process. An environment-oriented expert said:

¹³⁶ The committee was an organisation where protestors from three counties worked together.

The Yeongwol Dam event seemed to be a shock. We have seen the first event that social development was cancelled because of a non-economic reason, (and) the ecological, very abstractive value. ... In the case of the Yeongwol Dam, environmental NGOs could directly participate in or recommend members for the joint investigation committee. By the private and public joint committee, negative conclusions were drawn. So the case might be an event which radically increased private (NGOs') participation

The MLTM and Kwater took formal processes for the dam construction. The Yeongwol Dam Construction Office of Kwater was established in April 1997 and expected reservoir basins were designated in September 1997. A dentist, Lee Seung-gun¹³⁷, the president of 'Track Korea', a tracking company and a leader of Uiryong Conservation Club, an environment NGO, was one of the first environmentalists who participated in the Yeongwol event. According to his suggestion at a meeting of the club's steering committee, it investigated the Yeongwol Dam area and decided to start the dam cancellation movement in October 1997 (Lee, 2005b). The club held a 'rafting demonstration' on the Dong River on 19 October 1997¹³⁸ with 11 NGOs. The participation of the Korea Federation of Environmental Movement, which accumulated significant resources from major environmental events such as the 'Onsan Disease event' and the 'Phenol event', became a critical juncture of the Yeongwol Dam cancellation movement.

The environmental NGOs, including the Korea Federation of Environmental Movement, employed two strategies: pointing out major problems resulting from the dam construction and suggesting alternative ways of water resources management. The main focus of the first strategy was on questions about dam safety and the ecological value of the Dong River. The focal point of the second strategy was water demand control policies which would replace the water supply oriented policies of the MLTM or at least reduce the water demand. To achieve public support, which is a major resource of environmental NGOs, the Korea Federation of Environmental Movement organised

¹³⁷ He runs Track Korea to introduce the natural beauty of Korea and experience the natural beauty of the Dong River while he manages a dental clinic. As a means to prevent the dam construction, he might contact the Uiryong Conservation Club.

¹³⁸ 12 NGOs such as Track Korea, Korea Federation of Environmental Movement, and Citizens' Coalition for Economic Justice and around 200 citizens participated in the 'rafting demonstration' (Kyunghyang-shinmun, 1997a, p.27). They adopted a catch phrase, 'Save the Dong River! Cancel the Yeongwol Dam!.

diverse events with other NGOs. This NGO established 'A National Preparatory Committee for the Deterrence of Reckless Dam Construction and the Prevention of Damages by the Dam' which diverse social groups such as NGOs, expert groups and a lawyers' association joined (Hankyoreh, 1997, p.26). In the demonstration for the committee inauguration on 6 November 1997, 100 representative seniors adopted the '100 Persons' Declaration'. They stated:

The Dong River area is composed of limestone and has many caves, so if a dam is constructed, the risk of dam collapse would be very high. It also has a natural and ecological environment such as a natural treasure '*Baekryong Cave*', otters, sawbills, and flying squirrels (Hankook-ilbo, 1998, p.17).

Furthermore, the NGOs utilised the natural beauty of the Dong River to protest against the dam construction for which rafting was an effective means. Several policy conferences and demonstrations between 1998 and 2000 were organised by the Korea Federation of Environmental Movement. These events effectively drew the attention of the press which significantly contributed to the dissemination of negative public opinion against the dam construction. In particular, a documentary, 'The Dong River' produced and broadcasted by KBS on 3 March 1999 considerably aroused public concerns about it. As a result, the public perceived the dam construction negatively. A survey of 1,000 citizens conducted by Hankook-ilbo, a newspaper, illustrated that 69.6 per cent of respondents negatively replied to the dam construction (Hankook-ilbo, 1999a, p.42).

The demand control policies of the NGOs effectively competed with the water supply-oriented policies of the MLTM. These demand control policies included several measures, including the reduction of piped water leakage. The Korea Federation of Environmental Movement propelled a 'water saving campaign'. Choi Yeol, the secretary general of the Korea Federation of Environmental Movement, stated the purpose that:

(We) cannot deny that we waste water. If people, business and governments try to save water with a concrete target, we can save water (Hankook-ilbo, 1999b).

One of the noticeable events against the dam construction and for the water demand control strategy was the 33 persons' relay demonstration for 33 days and nights from 23 March 1999. The demonstration was held by important persons from the press, academics, religious organisations, NGOs and the literary world¹³⁹. They declared:

Without water demand control, to construct the Donggang Dam having the capacity of seven hundred thousand tons of water is the typical example of the self-interested organisational behaviour and bureaucracy of the MLTM and Kwater (Hankook-ilbo, 1999c, p.24).

7.4.4 E2-3: Mobilisation of Political Leaders

The public awareness attracted and mobilised political leaders. The Prime Minister had his office mediate diverse interests and opinions about the dam construction in 1998, but his attempt was not successful despite several mediation trials. The Environmental Forum, which consisted of 41 National Assemblymen, declared on 21 July 1998:

The superficial environmental impact evaluation can lead to the destruction of ecology and natural treasures (Hankyoreh, 1998, p.4).

It requested the reconsideration of the dam construction to the MLTM and Kwater. The Environment and Labour Committee of the National Assembly investigated the safety issues of the dam in 1999. The governor of Gangwon Province governing the dam areas declared his objection to the dam construction on 8 April 1999. Gangwon Provincial Assembly and Chungbuk Provincial Assembly also rejected the dam construction and 18 local assemblies in Gangwon province followed the opposition too.

President Kim Dae-Jung gradually changed his opinion from support to rejection. On 8 April 1999, the president said:

¹³⁹ The 33 persons embraced Han Wan-sang, a former Prime Minister, Song Wol-ju, a former executive chief of the Korean Buddhist Jogye Order, Kim Jin-hyun, the president of Munhwa-ilbo, a major newspaper, Kim Seung-hun, a Catholic priest, Son Suk, the co-chairman of Korea Federation of Environmental Movement, Kim Sang-jong, a professor and Park Wan-su, a novelist.

(We) should consider the environmental conservation of the Dong River, but protecting the lives and properties of twenty million residents in the Capital Region is important (Kyunghyang-shinmun, 1999, p.45).

Yet he said in a news conference on 6 August 1999:

Based on my personal opinion, if we cannot do (the dam construction), I do not want to do (it). ... From the view of the environmental conservation, the government does not need to stubbornly do the work which many people worry about (Munhwa-ilbo, 1999, p.6).

The ruling party, the Democratic Party, decided to reject the dam construction without consulting with the government on 21 March 2000, while a major opposition party, the Grand National Party, were already against it (Kukmin-ilbo, 2000, p.6). Finally, the president announced the cancellation of the Yeongwol Dam construction on 5 June 2000.

7.4.5 E2-4: Strengthening of Environment-oriented Governance

During the changing process of decision making on the Yeongwol Dam construction, the NGOs' influence considerably increased. The NGOs and the ministries equally recommended members of the 'Joint Committee for a Comprehensive Feasibility Study on the Yeongwol Dam Construction'¹⁴⁰. The committee decided to cancel the dam construction, even though it recommended a flood control dam as an alternative on 2 June 2000. This committee said:

There has been a lot of controversy amongst experts during this investigation period. In this context, the basin of the Dong River not only contains precious cultural heritage sites such as paleolithic remains and Baekryong Cave, but also rich ecological diversity in relation to its elevation and extent. In addition, due to the fact that the basin

¹⁴⁰ President Kim supported the committee by saying "(I will) make the final decision about the dam construction after the Prime Minister's Office composes a Joint Committee and investigate it (Munhwa-ilbo, 1999, p.6)."

has a unique limestone ecosystem, its ecological value is enormous. Consequently, this area needs to be conserved (Oh, 2006, pp.311-312).

The Yeongwol Dam cancellation episode became a direct cause which allowed NGOs to participate in official decision making on environmental issues. President Kim said, when he declared the dam cancellation:

To discuss environmental issues with firms and civic groups, (I will) establish the Presidential Commission on Sustainable Development and strengthen the pre-negotiation and coordination on economic policies and environmental policies (Hankyoreh, 2000, p.2).

7.5 Purposive and Material Actors in the Environment-oriented Governance

The above sections historically analysed the causal process of forming the environment-oriented governance and devolving power from a few political and economic elites to a wider range of actors through two major environmental episodes: the phenol contamination in the Nakdong River and the cancellation of the Yeongwol Dam construction, based on institutional processualism. The processual analysis identified critical events and their casual links, and found the main actors and their changing power relations. Even though the two episodes shaped the evolutionary path of environment-oriented governance, within those cases, different actors were motivated by different incentives and networks. As proposed in Subsection 2.3.1, the analytical framework of this research sees that the democratisation of decision making results from intense interaction between purposive actors and material actors responding to contexts and/or events. That is, human action is motivated by not only material interests but also normative incentives like beliefs and ideologies. This section separately analyses the incentives and networks of related actors of the two cases based on the perspective of purposive and material incentives (Moe, 1981, Jenkins-Smith et al., 1991, Sabatier and Jenkins-Smith, 1993).

7.5.1 The Phenol Contamination Episode

Due to the significance of the phenol contamination event, the conflict and cooperation between related actors was intensive. This event forced development-oriented actors, who were mainly motivated by material incentives, to be on the defensive. Though political elites had been a main supporter of the growth first strategy, they criticised the polluter Doosan as an immoral Chaebol and quickly prepared diverse measures to prevent environmental pollution, and by doing so, they successfully escaped their responsibility regarding the structural problems of the pollution. Nonetheless, economic and industrial actors effectively revived the myth of development and supported Doosan to resume its operations quickly. These development-oriented material actors formed a loose network for economic development. An environment-oriented network was composed of diverse purposive and material actors. NGOs having purposive incentives led this weak network by formulating diverse events and supporting victims. The ME, a material actor, kept itself separate from other environmental actors, but tried to diffuse the environmental ideology of unifying water (quality) management. This subsection intends to analyse the dynamics of this and focus on the incentives and networks of related actors.

7.5.1.1 Material Actors and the Development-oriented Network

Large Corporations

Under the supply-oriented governance, environmental pollution was intentionally neglected, and even supported by the state as analysed in Subsection 6.4.4. Large corporations having strong material incentives discharged factory waste without proper treatments. Therefore, compensation disputes between firms and residents were periodical events. In fact, an accidental leak of undiluted phenol was the direct cause of the Phenol pollution event rather than a purposive discharge of waste phenol (Shin, 2007, p.35). Yet, during the prosecution process, the fact that Doosan disposed 325m³ of waste phenol since 1990 was discovered (Hankook-ilbo, 1991a, p.23). Doosan tried to designate the phenol pollution case as an accident. This Chaebol argued in a written apology published in various newspapers on 22 March 1991:

This accident unintentionally occurred ... because highly soluble phenol flowed into the Nakdong River. ...We sincerely apologise to both the residents in Daegu and Yeongnam who suffered from the accident and our nation (Koo, 1996, p.276).

As analysed in Subsection 7.3.1.1 and 7.3.3.3, Doosan did not fully keep its promise of providing full compensation for the victims. Thus, pregnant women fought for the compensation that was promised. This dispute was settled by an arbitration of court after a four year struggle. Based on the support of the economic ministries and industrial associations¹⁴¹, Doosan raised an administrative adjudication against the ME's decision on the closure of its factory on 6 April 1991. Consequently, the development-oriented network succeeded in the re-opening of the factory in a short time (see Subsection 7.3.4). In short, the large corporation, Doosan, was strongly motivated by material incentives and formed a development-oriented network with business associations and economic ministries.

Economic Ministries

As analysed in Subsection 7.3.2.2, Korea's ministries have been motivated by their own interests rather than purposive incentives. In the early stages of the phenol contamination episode, Doosan was recognised as the most immoral corporation, which purposively neglect the public's interest, by the press, NGOs and even President Rho Tae-woo. A growth first discourse was generated by the industry and strengthened by economic ministries as analysed in Subsection 7.3.4. Soon after, Lee Bong-seo, Minister of Commerce and Industry supported the reopening on 28 March 1991 at a business conference. Choi, Gak-kyu, Deputy Prime Minister and Minister of EPB confirmed it at a news conference¹⁴². Economic ministries still overpowered the ME and had it shorten the cessation of work. In addition, the Fair Trade Commission

¹⁴¹ Korea Electronics Association and Korea Electronic Industries Cooperative requested the re-opening of Doosan's factory to the government by, for instance, advertising in a newspaper, Jungang Gyeongje Sinmun, on 4 April 1991, that the "Long term closure of Doosan Electro-Materials Co., Ltd is not a problem of only one company and will cause the crisis of the whole electronic industry (Koo, 1996, p.278)"

¹⁴² Choi, Gak-kyu said that "due to the closure of Doosan Electro-Materials Co., Ltd, the domestic electronic industry suffers from a shortage of raw materials. (I will) allow the reopening of the company before 10 (April) when the construction of the discharge prevention facilities (of phenol) finishes (Yoo, 1991, p.7)".

assisted the growth first ideology by prohibiting the boycott movement of the Supermarket Cooperative Association.

Political Leaders

Political leaders such as the president and national assemblymen strategically acted to protect and achieve their political interests. President Rho Tae-woo tried to escape from the structural problem of the 'growth first' policy which purposively neglected environmental management (Koo, 1996, p.276). In the event of the phenol contamination, when he received the report of the phenol contamination event on 21 March, he ordered that "the Prosecutors' Office should thoroughly investigate the case and claim legal responsibility for it (Kang, 1991, p.2)." On 22 March when the president visited the Office of Gyeonggi Province, he blamed the Chaebol Doosan by designating the phenol contamination event as 'an unforgivable crime'. The Prosecutors' Office quickly responded by arresting six employees of Doosan and seven government officials. Soon after the second phenol contamination event, he dismissed the Minister and Vice Minister of Environment.

The president directed the Prime Minister to investigate the real state of water pollution and illegal waste water discharge and to make a clean water supply plan including the construction of STPs (Segye-ilbo, 1991a, p.1). According to the request, the Prime Minister organised and convened the 'Ministerial Meeting on Water Quality Issues'¹⁴³, on 22 March 1991 (Lee, 1991b, p.1). On 25 March the president chaired the meeting and requested inter-ministerial measures (Seoul-shinmun, 1991b, p.6). This promoted the establishment of new institutions to prevent water pollution as investigated in Subsection 7.3.5.2.

National Assemblymen excessively responded to the event because of their awareness of voters (Rho and Park, 2004, p.27). They investigated the scene of the event and attributed the cause of the event to the ME's neglect in enforcing environmental regulations and the corporation's lack of environmental consciousness (Rho and Park,

¹⁴³ This meeting was composed of ministries from EPB, the ME, the Ministry of Home Affairs, the Ministry of Construction, the Ministry of Commerce and Industry, the Ministry of Health and Society, the Ministry of Justice, and the Bureau of Public Information (Jung, 1995, p.33).

2004, p.27, Jung, 1995, p.34). Assemblymen requested a complete overhaul of environmental policies and the meticulous planning for the prevention of water pollution (Rho and Park, 2004, p.27).

However, as time passed, the concerns of the public and the resistance of NGOs and citizens were eroded. The president and political leaders did not continue their policy (Jung, 1995, p.41). In short, the Phenol contamination episode shows that big business, political leaders and economic ministries formed a development-oriented network based on material interests.

7.5.1.2 A Network and Incentives of Environment-oriented Actors

NGOs

As Jenkins and Smith (1993, p.151) suggest, NGOs were a representative purposive actor during the period of the environment-oriented governance. Because the phenol contamination event impacted on whole areas in the middle and lower stream of the Nakdong River, it aroused great concern by the local people. Responding to this concern, local NGOs organised several demonstrations. Leading environmentalists in local environmental NGOs were motivated by purposive incentives. To illustrate, the Preparatory Meeting for Daegu Conference of Anti-pollution Movement was entitled 'the change of society with environmental movement' (Shin, 2007, p.56). Chang-sik Moon, a leading local environmentalist, said about his motivation to participate in the environmental movement as follows:

When the phenol contamination event took place, the rich got water from mineral springs or bought bottled water. People in social welfare facilities could not. I felt that the underprivileged were more seriously affected. This experience and shock made me become an environmentalist (Shin, 2007, p.59).

Environmentalists in national NGOs were rooted in the democratisation movement and were basically motivated by purposive incentives. They attempted to change the direction of the environmental movement from 'demonstration' which focused on supporting the victims of industrial pollution, to 'popularity' which was aimed at public

participation. For this reason, national NGOs organised two big performances: a gold fish experiment and the Event of Pouring OB Beer. They tried to make local movements such as boycott movements against Doosan products and the rejection of water charge payments national events.

Citizens and Victims

Citizens, who had no direct interest in the event, actively participated in the environmental movement. To illustrate, many restaurants installed placards which notified customers that “This restaurant does not sell OB beer made by Doosan (Dongailbo, 1991e, p.1)”. A conspicuous event in the phenol contamination episode was the participation of the Supermarket Cooperative in the boycott movement against Doosan products. Though the cooperative is a typical material actor and was in a subordinate position to big suppliers like Doosan, it responded to the contamination case with purposive incentives. Consequently, as investigated in Subsection 7.3.3.2, the sales of OB beer conspicuously decreased.

Citizens who lived near the middle and lower stream of the Nakdong River were directly or indirectly affected by the phenol contamination event. This activated the local environment movement. As shown in Subsection 7.3.3.3, a remarkable case was the resistance of pregnant women which had lasted a long time until 1995. In addition, local people voluntarily organised the environmental movement. To illustrate, residents of an apartment in Daegu collectively rejected the payment of water charges (Hankyoreh, 1991d, p.15).

Ministry of Environment

The ME was an interested actor as analysed in Subsection 7.3.2.2. It developed the ideology of ‘the unification of water (quality) management’ which had been widely backed by diverse actors as shown in Subsection 7.3.2.1. The ministry has strategically used environmental events to their advantage. The phenol contamination events allowed the ME to lead in the establishment of the environment-oriented institutions as analysed in Subsection 7.3.5.2. Yet, the ME did not have any close relationships with other environmental actors. Rather, it tended to support the development-oriented ideology,

for instance, by shortening the work cessation order against Doosan and speeding up the arbitration process between Doosan and the victims. The ME did not acknowledge the causes and effects between phenol contamination and the stillbirths of pregnant women (Shin, 2007, p.61).

7.5.2 The Cancellation Episode of Yeongwol Dam Construction

The cancellation of Yeongwol Dam's construction was, in general, a result of the intended action of the environment-oriented network. In the beginning stage of this event, the development-oriented material actors had strong support from political elites and the press. However, due to their failure to meet the needs of local residents, the opinion of local residents started diverging towards the objection of the dam construction. Environmental NGOs made this event a national issue. Public opinion became negative towards the dam construction. As a result, the development-oriented actors lost their traditional support from political leaders and economic elites. This subsection attempts to investigate the dynamics of this situation.

7.5.2.1 Material Actors and the Development-oriented Network

The Ministry of Construction¹⁴⁴ and Kwater

The policy focus of the Ministry of Construction has been on water crises such as massive floods and severe drought based on a strong 'development-oriented ideology'. The ministry has perceived that limited water resources per capita compared to other countries and the considerable seasonal and regional variations of water resources as main obstacles for water resources management (refer to Subsection 5.2.2). Even the recent National Water Resources Plan established in 2006 stressed extreme water crises between 2001 and 2003¹⁴⁵ as the main reasoning for its revision. Consequently, the

¹⁴⁴ The Ministry of Construction and the Ministry of Transportation were consolidated into the Ministry of Construction and Transportation on December 23, 1994. In addition, by combining the Ministry of Maritime Affairs and Fisheries, the Ministry of Construction and Transportation became the MLTM, the largest ministry, on August 29, 2008.

¹⁴⁵ The 2001 drought resulted in restrictive water rationing to 93,615 households whereas the 2002 drought was enforced on 27,678 households (Ministry of Construction and Transportation, 2006, p.5). In addition, Typhoon Rusa in 2002 caused 246 deaths and damaged properties worth KRW 5,147 billion and Typhoon Maemi killed 131 people and destructed properties worth KRW 4,223 billion (Ministry of Construction and Transportation, 2006, p.5).

development of water resources and the increase of flood control capacity have been the most important basis of policy formation. This is a way to meet its own interests (see Subsection 7.3.2.2). Kwater is a public corporation under the control of the ministry. Thus, concerning policies of water resources management, it has the same basic interests as that of the MLTM.

In the same vain, as analysed in Subsection 7.4.1, the direct cause of the Yeongwol Dam construction plan was due the big flood in 1990. The MLTM continuously tried to progress the dam construction with Kwater. The MLTM attempted to persuade local residents through diverse meetings, to make the dam construction a fixed fact, and to build friendly relations with other organisations (Joo and Hong, 2001, pp.282-283). However, they did not attract full support from typical development-oriented actors such as the economic ministries (Joo and Hong, 2001, p.283) and political leaders. Rather, as investigated in Subsection 7.4.4, the ministry and Kwater gradually lost their support. In the period of environment-oriented governance, the development-oriented network, at least in the water sector, tended to shrink.

7.5.2.2 A Network and Incentives of Environment-oriented Actors

Ministry of Environment

During the phenol contamination episode, the ME did not challenge the development-oriented actors, but supported their policies (refer to Subsection 7.5.1.2). The ministry even denied the health hazards of the phenol contamination (Rho and Park, 2004, p.26). This was probably because political leaders, including the president and bureaucratic elites such as economic ministers, were directly involved from the beginning of the event. They attributed the cause of the phenol contamination to the improper management of a private company and the negligence of related officials, and still they supported the ‘growth first’ policies.

However, from the beginning stage of the Yeongwol Dam construction event, the ME became the strongest competitor of the MLTM. The ME implemented a strategy based on a legal process of environmental impact assessment. The ME requested the supplementation of the environmental impact assessment report of Yeongwol Dam to

the MLTM several times (Oh, 2006, p.304). In the first supplementary request on 22 July 1997, the ME stated, “Because this area has ecological value for preservation, (we) request the reconsideration of the implementation of the project (Joo and Hong, 2001, p.282, cited from the ME, 1997).” The second supplementation was in February 1998, and included issues about the safety of the dam and the preservation of Baekryong Cave (Joo and Hong, 2001, p.283). In addition, the ME officially started to object to the dam construction from the second half of 1998. For instance, the director of the Nature Conservation Bureau said at the Environment Forum of the National Assembly that “According to the ME’s review of the environmental impact assessment report submitted by the Ministry of Construction and Transportation in June 1997, if the Donggang Dam is constructed, there is a possibility of degradation to the water quality and ecology (Joo and Hong, 2001, p.288, cited from the Environmental Forum of the National Assembly, 1999).”

The ME formed a close network with environment-oriented actors. The ME asked for the review of the environmental effect evaluation reports to the Cultural Heritage Administration several times and received negative opinions¹⁴⁶ about the dam construction (Joo and Hong, 2001, p.285). Though the ME had kept a distance from NGOs during the phenol contamination episode, it sought to build closer relationships with NGOs in the cancelation episode of Yeongwol Dam construction. The ministry conducted a water conservation campaign with the Korea Federation for Environmental Movement, a representative NGO, and the Minister of Environment indirectly supported the NGO’s demonstration against the dam construction by visiting its encampment (Joo and Hong, 2001, p.289).

Political Leaders

As investigated in Subsection 5.7.1.1, political leaders are representative material actors. The public’s opinion started to converge over the objection of the dam’s construction from the middle of 1998 (Park, 2001b, p.220). Responding to public opinion, national political leaders started to oppose the construction of the dam (refer to Subsection 7.4.4).

¹⁴⁶ The Cultural Heritage Administration stated on July 20th, 1998 in its official document that “We request the revision of the environmental effect evaluation report because the report did not thoroughly evaluate the impact of the dam construction on the valuable repository of natural heritage in the related areas of the dam construction (Joo and Hong, 2001, p.285).”

In particular, the president withdrew his support for it, and declared the cancellation of the construction of the dam in 2000.

Before the autonomous local governing system began in 1995, local governors who were appointed by the central government supported the dam's construction. For instance, the governor of Jeongseon removed banners against the dam's construction in 1993, which were hung by a Cooperative of Jeongseon Shopkeepers and the Junior Chamber of Jeongseon, by reason of illegality (Choi and Hong, 2002, p.12). However, after the introduction of the autonomous local governing system, local political leaders in Jeongseon strategically responded to the dam construction. Though President Kim Dae-jung announced his support for the dam's construction on 8 April 1999, soon after the announcement, local political leaders including Kim Jin-seon, the governor of Gangwon Province, and local assemblymen from 18 counties and the province officially opposed it (Oh, 2006, p.306).

Residents

Residents had a direct interest in the dam construction based on mainly their material interest because they were more or less affected by it. Yet, their interests were different according to their living areas as analysed in Subsection 7.4.2. In particular, residents living in the evacuation area had very different interests from residents in other areas. Residents in the evacuation area opposed the dam construction until the end of 1996, whereas residents in the other areas of Yeongwol had supported it before 1994 when the event of Janggok water intake facility took place. Yet, the residents in the evacuation area changed their attitude from objection to consent to the dam construction. They organised the Residents' Committee in the Evacuation area and requested enough compensation for their properties (Chung, 2001b, p.251, Choi and Hong, 2002, p.11). Due to their speculative investment in cash crops and the government's elimination of subsidies, they became financially desperate (Chung, 2001b, p.259). In addition, the proliferation of the movement against the dam construction drove them into a corner. Consequently, they took the flexible position that if they were properly compensated for their damages caused by the cancellation of the dam construction, they did not stick to it (Choi and Hong, 2002, p.13). The other residents who were mostly opposed to the dam construction started to embrace the residents in the evacuation area (Chung, 2001b,

p.260). Therefore, the opinion of residents was converging to the objection of the dam construction.

NGOs

As analysed in Subsection 6.5.6, 6.6.2.4, 7.3.3.1 and 7.5.1.2, NGOs are mainly motivated by purposive incentives, although their basic perception about the environmental movement had changed from the ideology of democratisation to that of ecology or sustainability. Local NGOs during the cancellation episode of the Yeongwol Dam Construction had mixed incentives because their members might be related with the dam construction directly or indirectly. Local NGOs can be classified into two groups: a group composed of interested residents or shopkeepers and a group comprised of social activists. The former were established to represent the interest of the residents collectively. Those included a Residents' Committee in the Evacuation area and Jeongseon's Committee against Yeongwol Dam Construction. On the other hand, the latter might have mixed incentives because their daily lives would be affected by the dam construction, though they were rooted in social organisations. While national NGOs stressed the beauty of the Dong River and the ecological value of the area, the local NGOs emphasised a more practical issue, the safety of the dam construction (Oh, 2006, pp.296/298), though those evolved into main issues of the environmental movement against the dam construction.

This section found the existence of purposive incentives and their active role in human action. Apparently, in the Phenol contamination episode, purposive actors, such as NGOs and citizens, with the ME, a material actor, formed an environment-oriented network. The network competed with a development-oriented network organised by material actors including large companies, economic ministries and political leaders. Similarly, the Yeongwol Dam episode identifies a development-oriented network and an environment-oriented network. Interestingly, in the Phenol contamination episode, the MLTM was not a main actor, though it was victimised by losing its control over the local water and wastewater sector. Through two episodes, the environment-oriented network strengthened its power over the Korean water sector and the governance of the sector became more democratic. The next section tests the degree to which the public

participated in the three layers of decision making in the environment-oriented governance based on the participatory map of this research (see Subsection 2.3.2).

7.6 Participation in the Environment-oriented Governance

In Section 7.2, 7.3 and 7.4, the process of forming the environment-oriented governance was historically analysed based on institutional processualism. Section 7.5 tested the postulation of this research about purposive incentives with the perspective of Moe (1981), and Jenkins-Smith and Sabatier (Jenkins-Smith et al., 1991, Sabatier and Jenkins-Smith, 1993). This section analyses the level of participation according to a participatory map, which was developed based on SDT and its related theories such as Pretty (1995) and Arnstein (1969) (refer to Subsection 2.3.2).

7.6.1 The Case of the Phenol Contamination Accident

The phenol contamination event was an accident. Thus, the discussion about its positioning on the participatory map may focus on policy formation and their implementation after the event. During this event, strategic decisions that were made seemed to be policy formation that was concerned with the prevention of water pollution which included the reduction of waste water, the strengthening of regulations, and the protection of victims. Operational decisions can embrace the implementation of the strategic decisions and the formation of local policies within the constraints of strategic decisions. Working decisions may include the intensity of policy implementation.

The formation of a water quality management policy for the four great rivers before and after the contamination event was initiated by President Rho as analysed in Subsection 7.3.5.2. The Prime Minister's Office coordinated plans for water quality improvements which included regulations, investment and finance, and organisational and functional structure. The ME was the most active player in the policy formation because water quality degradation increased the concerns of the public (refer to Subsection 7.2.1.2) and environmental accidents provided the ME with the support of NGOs and citizens (see Subsection 7.3.4). However, the policy formation was still in the hands of a few political and bureaucratic elites. As analysed in Subsection 7.5.1.1, political leaders and

ministries responded to the phenol contamination event in a reactive way. The Comprehensive Measures for the Water Quality Improvement of the Four Great Rivers was prepared within a month, so it was simply a revised version of the 1989 Comprehensive Plan for Clean Water Supply (Jung, 1995, p.36). Strategic decisions in the formation of policies before and after the phenol contamination event tended to be located in nonparticipation on the participatory map.

Operational decision making tended to be positioned between non-participation and tokenism. In the implementation of national policies, though the policies were formed during the Ministerial Meetings on Water Quality Issues which consisted of the ME and economic and regulatory ministries, their implementation was not effectively ensured due to noncooperation between ministries. To illustrate, the ME intended to establish a central environmental police force with seven branches in industrial areas, but failed because the idea was rejected by EPB and the Ministry of Government Administration (Jung, 1995, pp.39-40). That is, operational decisions in the national level were not open to the public.

Rather, operational decisions were still being fought over between interested ministries. In contrast, operational decisions at the local level allowed local governments to be active. Daegu Metropolitan City, which was located in the middle of the Nakdong River and affected most seriously by the phenol contamination, investigated the event with the Daegu Regional Environmental Office and Gyeongsangbuk Province as a member of a joint investigation team (Lee, 1991a, p.31). Daegu Metropolitan City also decided to exempt whole water charges except industrial water for six days from the 16 to 21 March and carried out the compensation procedure for victims (Lee, 1991a, pp.34-35). However, there was no evidence that local people were allowed to participate in decision makings as main decision makers. They seemed to be passively involved in the decisions regarding compensation.

In the level of working decisions, Daegu Metropolitan City technically approached the phenol contamination. The city focused on the detection and analysis of pollutants, the preparation of emergency water supply facilities such as water wagons, and the stoppage and resumption of water supply. Nonetheless, only limited information about these were opened to the public. Thus, the public still remained as passive participants.

7.6.2 The Cancellation Case of Yeongwol Dam Construction

The Yeongwol Dam construction event was a dynamic process of policy formation. Diverse actors strategically cooperated and conflicted with each other in order to realise their interests and beliefs during this process. Strategic decisions include choices for the dam's construction or alternative ways for flood control and water supply. Operational decisions might consist of mechanisms for compensation, design of the dam's size, and designation of affected areas. Working decisions can be methods used for implementing or opposing dam construction.

This event can be classified into two stages: the formation of dam construction policies and the decision of its cancellation. The decision to construct the Yeongwol Dam was made with a top-down manner. After the big flood of 1990, President Rho Tae-woo ordered permanent measures to prevent flood damage in the Han River and the Ministry of Construction announced the Yeongwol Dam construction plan (Choi and Hong, 2002, p.9). The planning process for the construction of the dam was not very open to the public. According to the Act for the Construction of Dams and Assistance, etc to their Environs, the Long Term Plan for Dam Construction, the highest plan for dam construction, is established by the MLTM after consultation with related ministries and the deliberation of the National River Management Committee. This committee is mainly composed of bureaucrats and experts, though a few environmentalists tend to be included. The Master Plan for Dam Construction and the Executive Plan for Dam Construction are made by the approval of the MLTM after consultation with other ministries without deliberation of the National River Management Committee. The strongest balancing mechanism is the environmental impact assessment of the ME as analysed in 7.5.2.2. The only official process for the public to participate in any policy formation was through public hearings. The event of the Yeongwol dam construction did not deviate much from this general process. The MLTM initiated public hearings in 1996 when it prepared the master plan and the draft of environmental impact assessment of Yeongwol Dam. In addition, operational and working decisions were generally dominated by the MLTM. The MLTM strategically implemented legal processes. For instance, despite the objection of residents, it designated the submerged area by the dam. To reduce the antipathy of residents, the ministry suggested several developmental

projects for the local economy. Consequently, major responses by residents and NGOs against the dam construction were demonstrations and publications. In the planning stage of the dam construction, strategic decision making was in the level of non-participation and operational and working decisions were at a level of tokenism.

In the cancellation stage of the dam's construction, strong voices from residents, NGOs, political leaders and the press made the government open up the strategic decision making process. The Prime Minister's Office held a deputy ministers' meeting which consisted of the ME and the MLTM on 4 January 1999. The meeting discussed ways for NGOs' to participate. The meeting requested the MLTM to organise a joint evaluation committee and the ME and the Gangwon Province to cooperate with the MLTM positively (Joo and Hong, 2001, p.286). The MLTM persuaded Korea Federation for Environmental Movement to participate in the joint committee, but failed because this NGO perceived that the committee was organised on the assumption of the dam construction (Joo and Hong, 2001, p.286). As a result, the Prime Minister's Office formed the Joint Committee for a Comprehensive Feasibility Study on the Yeongwol Dam Construction in September 1999. As analysed in Subsection 7.5.2.2, social actors officially participated in the strategic decision making process. Yet, the strategic decision making process was not fully open to the public, who were in the position of being consulted. Therefore, strategic decision making was at a level of tokenism. Operational and working decisions within the committee were negotiated and determined by its members. Thus, they were at the same level of participation as that of the strategic decisions. This section showed an increasing pattern of democratic participation during the process of forming the environment-oriented governance.

7.7 Concluding Remarks

Two environmental episodes: the Phenol Contamination Episode and the Yeongwol Dam Cancellation Episode reflected the diversification of actors and their changing interests and demands. During the industrialisation periods, the policy focus of the government was on the conventional growth of the economy notably represented by GDP per capita. The developmental state chose an unbalanced economic development policy which favoured specific industries and regions. Environmental conservation was purposely neglected. As a result, these caused strategic failures mostly appearing in the

form of an economic gap between industries, regions and classes, and environmental pollution. In the water sector, these failures were revealed through uneven water services between regions and water pollution cases. The failures provoked severe conflicts between regions and classes, giving birth to diverse interest groups and social actors. They started raising their strong voice. The strong pressure from the public dismantled the authoritarian and developmental government (refer to Subsection 7.2.2).

The governance change was caused by previous and contemporary events. Most of the events were the result of interaction among actors and between context and action whilst some of them occurred unintentionally. To illustrate, the phenol contamination accident was an unintended event, but became a critical juncture which provided 'a window of opportunity' through which a new type of governance could be created. On the other hand, the cancellation of the Yeongwol Dam construction was strategically organised by environmental activists. To make the event a national issue, the NGOs utilised the press, developed a policy alternative and gained public support. Consequently, the dam construction was cancelled.

The environmental events significantly changed the decision making structure of the water industry which had been dominated by economic ministries. Decision making centres devolved from a few developmental political and administrative elites to more of a collective group with dispersed actors, including environmental bureaucrats and NGOs. Accordingly, diverse interests and beliefs including the environment and social equity, started to be reflected in the decisions. The water demand policies started to be more prioritised than the supply-oriented policies. The MLTM started making use of existing water resources rather than developing new water resources. It introduced the policy of cooperative dam operation and the connection policy between multi-regional water supply systems.

This research suggests that both the market-oriented theory based on the Washington Consensus and the state-oriented developmental theory have some limitations to explain the governance change of the Korean water industry (see Section 2.4 and 6.1). This is because those theories could not properly accommodate diverse interests and beliefs from diverse actors. The market is not inclusive enough to treat environmental externality, but the market in the neo-liberal world is also controlled by a few. The

bureaucratic state has been long criticised because of its incapability to deal with new demands emerging in the industrialised era, being captured by powerful actors, being bypassed by internationalisation and bureaucrats having vested interests (Kjaer, 2004, pp.22-24). In the developmental path of the Korean economy, the state played a significant role when the economic structure was relatively simple and the elites devoted themselves to ignite economic development and to escape the absolute poverty situation. Yet, the state controlled by a few was not able to properly respond to the rapidly changing world.

In particular, environmental issues were ignored by the state. Large corporations added to the environmental burden for their own material interests. Ministries were self-interested. The developmental ministries and the environmental ministry started competing with each other to gain more power and resources. The advent of environmental actors within and outside the government was significant. Increasing numbers of local and national environmental NGOs having purposive incentives furthered the environment-oriented ideology. Local residents were affected by the environmental events, and thus they became members of the environment-oriented network. Political leaders took the opportunistic position between environmental conservation and economic development. Consequently, the governance change of the Korean water sector was the outcome of interaction between the state, NGOs, residents, the press and the political leaders who actively responded to achieve their own interests and beliefs.

Concerning the levels of participation, strategic decisions were still in the hands of a few elites. Decisions made during the phenol contamination episode were dominated by political and bureaucratic elites whereas decisions in the cancellation of Yeongwol Dam construction were shared with environmental elites. Thus, the public was still passive in the decision making process.

However, events in the environment-oriented governance caused the growth of civic power (L.E.1), the increasing demand for environmental investment (L.E.2), the stabilisation of water supply and demand (L.E.3). These events become previous events of the market-oriented episode in the next chapter. With these events, a financial and economic crisis, namely the IMF crisis in 1997 forced Korean economy to

accommodate diverse market-oriented policies including the privatisation of utility industries. The next chapter examines the influence of these events on the water sector governance of Korea and actors response to the contextual change.

Chapter 8 The Market-centred Economy and the Water Industry

8.1 Introduction

This chapter intends to investigate how the market-oriented governance in the Korean water sector has been formed and why the governance has been developed in this way by utilising institutional processualism. In addition, purposive and material incentives of actors are tested and the levels of public participation in the three layers of decision making are investigated from the perspective of a participatory map suggested in Chapter Two.

Figure 31 shows an analytical framework used to examine the causal relations between events during the developmental process of the market-centred governance of the Korean water sector. Globalisation and liberalisation policies (P.E.1) were a direct cause of the financial and economic crisis in 1997, namely the IMF crisis (C.E.1), which was a critical juncture of shaping the governance of the Korean water sector. Reflecting on the state-led industrialisation and its resulting economic crises under the developmental government during the 1960s and the 1970s, the Chun government chose a stabilisation policy (C.E.2-2 in Chapter 6) and the Rho regime maintained a liberalisation policy (C.E.2-3 in Chapter 6) based on neo-liberal ideas. President Kim Young-sam strengthened the neo-liberal economic policies by adopting ‘globalisation’ and ‘market liberalisation’. Those policies were highlighted in a financial reform which included the liberalisation of interest rates, the liberalisation of international and domestic money flow, and the opening of the financial market. This financial policy promoted the Chaebol to set up non-bank financial institutions as a means to secure a stable financial source. Without proper regulation, non-bank financial institutions, in particular merchant banks, borrowed short term foreign credits to finance long-term projects. The highly geared economy was shocked by the 1997 Asian financial crisis originating from Thailand, even though it achieved conspicuous economic reforms, including ‘real name accounting system’ and ‘real name property ownership system’¹⁴⁷. That was the IMF crisis. This event ironically strengthened the neo-liberal economy emphasising

¹⁴⁷ The real name accounting system and real name property ownership system prevent people from using others’ names or non-real names when they transact money and/or real properties. These introduced to inhibited speculative transactions and secret deals.

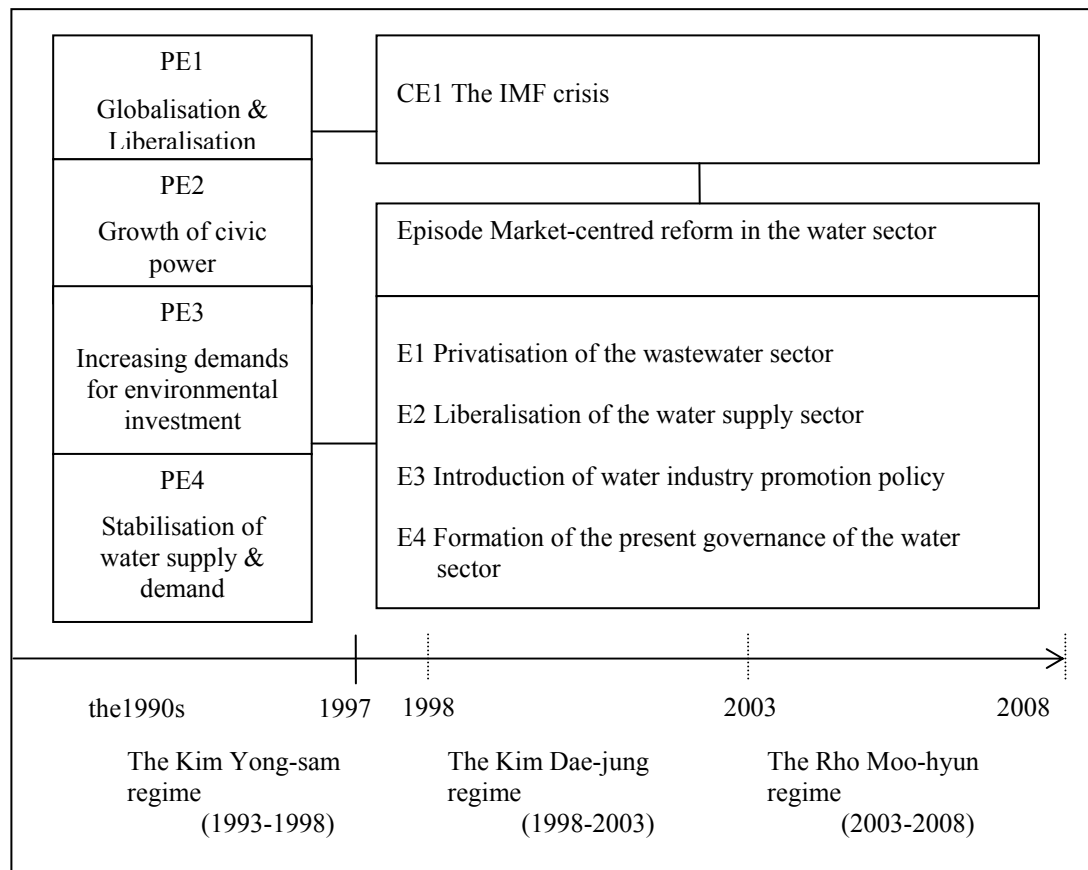
efficiency control, tightened expenditures and introduced privatisation in the water sector as in other utilities.

Meanwhile, the demand for environmental investment in water and wastewater services (P.E.2) significantly increased due to consecutive environmental events (P.E.1 and C.E.1 in Chapter 7). Most of the small and medium sized local governments have suffered from a lack of funds for new investments and rehabilitation projects as well as a shortage of expertise. Furthermore, the Yeongwol Dam episode (see Episode 2 in Chapter 7) led the construction of large dams, a main method to develop water resources to shrink, whereas highly increasing water demand during the industrialisation and urbanisation periods has stabilised since the beginning of the 1990s (P.E.3). This made social pressure shift from securing water resources to improving water quality and expanding water services to rural areas where underground water started to become severely contaminated. Therefore, the focus of policy debates became placed on the efficiency of the sector and the financeability for new investment. These prior and contemporary events created considerable pressure for the restructuring of the water sector.

The ME has propelled the privatisation policy. Yet environmental NGOs and labour unions, which emerged as strong decision makers under the environment-oriented governance (P.E.4), slowed the privatisation policy. Moreover, no single ministry dominated the policy making of the water sector. Rather than cooperating with each other, they have fiercely competed to gain more resources and decision making power. The Ministry of Land, Transport, and Maritime Affairs (MLTM) and the MPAS have preferred a corporatisation¹⁴⁸ policy. The ME could not fully realise its policy, but has fragmentally adopted it whenever opportunity windows for the privatisation policy have opened, even though it has legitimate power over the industrial policy of the water sector. This causes the governance of the water sector to become fragmented. This developmental process will be analysed from Section 8.2 to 8.7 based on institutional processualism.

¹⁴⁸ Corporatisation in this research means the transformation of a water or wastewater utility from a public authority to a public corporation.

Figure 31 Analytical Structure of the Market-oriented Case



Section 8.8 intends to investigate the purposive and material incentives of actors and their forming networks for realising their own interests and beliefs founded on perspectives from Dewey (1927), Moe (1981) and Jenkins-Smith et al.(1991). Related ministries were main players in the market-oriented governance of the Korean water sector. They competed with each other and organised networks to realise their own interests. National and local NGOs had an ideological perception about water as a human right. They fought against the privatisation of the water supply sector by constructing an anti-privatisation network with a material actor, labour unions.

Section 8.9 positions the level of participation corresponding to each layer of decision making on the participatory map suggested in the analytical framework of this research (refer to Subsection 2.3.2). Democratic decision making processes developed in the environment-oriented governance shrank in this market-oriented governance. The neo-classical ideology strengthened by the IMF crisis was strong enough to exclude social actors from formal decision making processes. Based on the case study of the market-

oriented governance, the degree to which related actors who were involved in the decision making processes will be investigated.

8.2 Prior Events

8.2.1 P.E.1: Globalisation and Liberalisation : 1993-1997

On 22 January 1990 President Rho Tae-woo, Kim Yong-sam and Kim Jong-pil announced the unification of three political parties: the Democratic Justice Party led by President Rho, the Unified and Democratic Party by Kim Yong-sam and the New Democratic and Public Party by Kim Jong-pil. Even though three political leaders justified it as a great alliance of conservative political forces, the secretly negotiated unification aimed to share and seize long-term political power (Kim, 1997b, pp.317-318). By the alliance, President Rho could overcome political instability and have some possibility for long-term seizure of power; Kim Yong-sam could surmount the limitation as the head of the third largest party and become the most competitive candidate for the next president; and Kim Jong-pil was able to be at the core of political power (Moon, 1993, pp.84-85). The newly established party, the Democratic and Liberal Party, became dominant and won more than 70 per cent of local assembly seats in local assemblymen elections in 1991. Consequently, Kim Yong-sam won political competition in the ruling party, ran for the 14th presidential election, and took office as the 14th president of Korea on 25 February 1993.

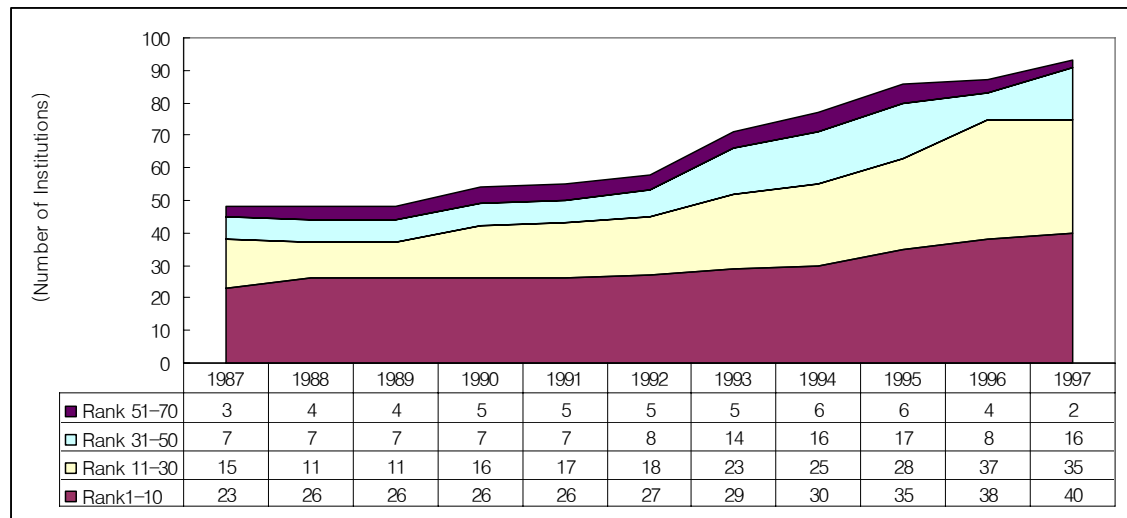
President Kim Yong-sam named his regime (1993-1998) 'the Civilian Government' and suggested creating 'a New Korea' to eradicate the 'Korean Disease' caused by the developmental and authoritarian state. He strongly drove reform policies from his early stage of power such as the real-name accounting system, the real-name property ownership system, reformation of the army, and clearance of corruption. This was to eradicate legacies from the military regimes and to prevent the concentration of economic power in a few Chaebol. To illustrate, the real-name accounting system, introduced by the Presidential Emergency Order on Real-name Financial Trade and Confidentiality on 12 August 1993, was targeted to uproot a close relation between politics and business fostered by the authoritarian governments (Kang, 2002, p.8). On the other hand, President Kim carried out a short-term economic revitalisation plan in

order to boost the recessed economy at the beginning of the 1990s and to prevent side effects of economic and political reformation. The plan included the freezing of public workers' wages and public utility charges, the decrease of public interest rate, and the early implementation of public projects (Choi, 1999, p.162). Nonetheless, the Kim regime employed an expanding fiscal policy. During the five years of the Kim government, the increasing rate of the central government' spending was 203.9 per cent, which exceeded the GNP growth of 174.3 per cent by 30 per cent points (Park, 1998b, p.129).

President Kim declared Globalisation in November 1994 after returning from the Second Summit Forum of the Asian Pacific Economic Cooperation in Bogor, Indonesia (Shin, 2003, p.138). His globalisation policies primarily focused on financial liberalisation based on the perception that the financial sector hindered the object-economy and had to respond to a global trend of openness and internationalisation. Strong pressure from the USA, the OECD and the IMF facilitated the policies and President Kim's will to make Korea a member country of the OECD accelerated them (Lim, 2004, pp.290-291). The financial reforms were the liberalisation of interest rates, the opening of the financial market, and the liberation of international and domestic money flow (Lim, 2004, p.287). As large firms in Taiwan (see Subsection 3.2.4), the Chaebol rushed to establish non-bank financial institutions, which were a stable source of money_as shown in Figure 32. Financial institutions owned by the Chaebol rapidly increased from 1993 when the government started liberalising the financial market going from 58 in 1992 to 93 in 1997. Park and Kim (2004, pp.1146-1147) suggested that the Chaebol's ownership of non-life and life insurance institutions and merchant banks positively affected the mobilisation of capital. In particular, merchant banks were granted foreign currency dealing rights and rights over the import of short-term credits (Thurbon, 2001, p.248). These merchant banks borrowed short-term foreign credits to fund long-term domestic investments in order to gain profits made by the difference between domestic and international interest rates (Chun, 2002, p.429). In addition, liberalisation of investment allowed big business to expand into new industries such as telecommunications, automobiles and steel with the same financing strategy as employed in the past, the high gearing financing. Without proper regulatory mechanisms and the government's capability to monitor capital flows and industrial investments, the financial structure of business and the nation deteriorated. Finally,

Korea was faced with the IMF crisis at the end of 1997. The globalisation and liberalisation were not directly caused by events in the environment-oriented case, but rather influenced by the political democratisation and economic liberalisation event which were propelled by the Rho Tae-woo regime in the supply-oriented case (refer to Subsection 6.5.3).

Figure 32 The Increasing Number of Non-bank Institutions



Note: Rank means the ranking of companies according to their scales in Korea.

Source: Park and Kim (2004, pp.1144-1145)

8.2.2 P.E.2: Growth of Civil Power

The 6·29 Democratisation Declaration was a result of civil protest and a basis for a diversified and strong civil movement. The declaration allowed civil actors, including labour unions, economic NGOs and environmental NGOs, to gain significant influence in policy making (see Subsection 7.3.3). In this context, environmental NGOs became an influential policy maker through pollution events. The NGOs not only protested against pro-developmental projects such as dam construction and large land reclamation, but also developed and suggested policy alternatives (refer to Subsection 7.4.3). The NGO started to have a clear position against the privatisation policy of the ME based on the perception that water is a public good. The labour unions of civil servants are a direct interest group of the privatisation policy. This is because local governments are the direct providers of the water services and so the members of the water authorities are civil servants. The labour unions have been apparently against the policy. Labour unions had already accumulated a strong veto power against labour policies through the

dismantling period of the strong state (see Subsection 6.5.5). Therefore, their position is critical for implementing the privatisation policy. Moreover, the NGOs and the labour unions formed an anti-privatisation network and have closely and collectively protested against the privatisation policy.

8.2.3 P.E.3: Increasing Demands for Environmental Investment

The comparative cases of English and Welsh, Italian and Argentine market-centred reforms in the water sector were analysed in Section 3.3. In Korea's case, the increasing demands for environmental investment provided a good basis for the water reforms. The Phenol contamination event, along with consecutive water contamination accidents during the period of the environment-oriented governance, significantly increased the public's demands for a better water environment and safe potable water (see Subsection 7.2.1.2 and 7.3.1). The 1996 Comprehensive Water Management Plan targeted the enlargement of 296 local water supply systems, the improvement of 8,656 simple-purification water supply systems, the establishment of 45 advanced water treatment systems, and the replacement of 42,757kms of old-pipes for the improvement of drinking water quality by 2011. In addition, the plan aimed to increase the wastewater treatment rate to 80 percent, the establishment of 43,786kms of sewers, and the construction of 3,439 small-scale water treatment plants in local villages by 2005. To achieve these targets, central and local governments needed to make large-scale investments. The plan estimated a sewerage investment of KRW 27 trillion (GBP 18.9 billion at the rate of the end of 1996) and a water supply investment of KRW 8 trillion (GBP 5.9 billion).

The ME estimated that the governments could realise only 56 percent of the sewerage investments. That is, the government should develop new financial sources for a large portion of the environmental investment. As analysed in Subsection 7.3.5.2, the privatisation of the water and wastewater sector emerged as a viable option.

8.2.4 P.E.4: Stabilisation of Water Supply and Demand

The cancellation event of Yeongwol Dam construction significantly impacted the way water resources are secured. The 2006 National Water Resources Plan proposed the efficient use of existing water resources as the first strategy, which included the efficient management of dams and the connection of water supply systems between regions. The second strategy was the development of small and medium dams rather than large dams and the establishment of alternative water resources such as the reuse of wastewater and rainwater. In fact, the MLTM constructed seven dams in the 2000s, but they were very small. The water supply capacities of the small dams ranged from 12 to 128 million m³ per year whereas that of Yeongwol Dam was 3,671 million m³ per year. That is, the Yeongwol Dam event directly caused the diminution of the development-oriented ideology in the Korean water sector.

Water demand began stabilising from the mid 1990s as shown in Chapter Four. To illustrate, domestic water consumption increased by 8.46 times while industrial water consumption grew by 8.5 times between 1965 and 2001. Yet the National Water Resources Plan estimated an increase of 0.25 per cent per year from 2006 to 2020. The stabilising water demand also weakened the ideological base of the supply-oriented governance. Demand control policies suggested by environmental actors during the Yeongwol Dam event attracted more support than development policies of the developmental ministries. Therefore, the policy focus of the water industry was transferred from the development of water resources, including dam construction, to the reduction of water consumption, such as the replacement of old pipes, the supply of water saving facilities, and a water saving campaign. The new tasks are concentrated on water supply and distribution rather than water source and transmission. Accordingly, local governments became more responsible for the water supply. This is because the costs and benefits of the tasks can be clearly identified and attributed to local governments and consumers. Consequently, the efficient use of water and the efficient management of local water supply systems became main issues in the Korean water sector. The high water leakage rate and inefficient management of local water suppliers and local governments started being heavily criticised. This became an influencing factor on the governance change of the water sector.

8.3 Episode: Market-centred Approaches in the Korean Water Sector

8.3.1 C.E.1: The 1997 IMF Crisis in Korea

8.3.1.1 The Outbreak of a Korean Financial and Economic Crisis in 1997

On 21 November 1997, the Finance and Economy Minister Lim Chang-yuel (Korea Times, 1997c, p.1) announced in a press conference, “Korea and the IMF reached an agreement on the rescue funds.” 13 days later, Korea and the IMF signed an USD55 billion rescue plan (Korea Times, 1997b, p.1). The fact that Korea, the world’s eleventh largest economy and a member of the OECD, applied for an IMF bailout was a shock, at least to the people of Korea. Most Korean newspapers described it as a national humiliation or an economic trusteeship (Park et al., 1997, p.31, Kyunghyang-shinmun, 1997b, p.3). Superficially, the heavy fall of the Thai baht by 45 per cent against the US dollar triggered an Asian financial crisis on 2 July 1997 (Korea Times, 1997a, p.7). With falling Thai exports, a bubble in the banking and property sectors led investors to sell Thai baht and stocks, which made the Thai government abandon its fixed foreign exchange system (Korea Times, 1997a, p.7, Chun, 2002, p.424). The shock shook all of the Asian economies because international investors were concerned about ‘Asian homogeneity’, which refers to their generally heavy dependence on debt for excessive investments and diversification, and the imbalance between cash inflow and outflow (Seo and Lee, 2001, p.27). The Korean economy could not stand against the shock and faced a financial crisis, namely the IMF crisis.

8.3.1.2 The Causes of the IMF crisis

Structural Problems resulting from the State-led Economy

The Korean financial crisis in 1997 and the resulting economic crisis have been explained based on several perspectives such as an exogenous shock, inappropriate responses of the Korean government, and structural problems of the Korean economy (Kim, 1998a, p.10). Some have attributed the Asian financial crises to moral hazard as a fundamental cause which drove financial institutions and firms to invest in high risk-high profit business areas depending on an implicit government guarantee (Krugman, 1998, p.3, Corsetti et al., 1999, pp.1129-1233). By noticing the bad effects of short-term capital flows, which decreased financial stability and increased the risk of financial

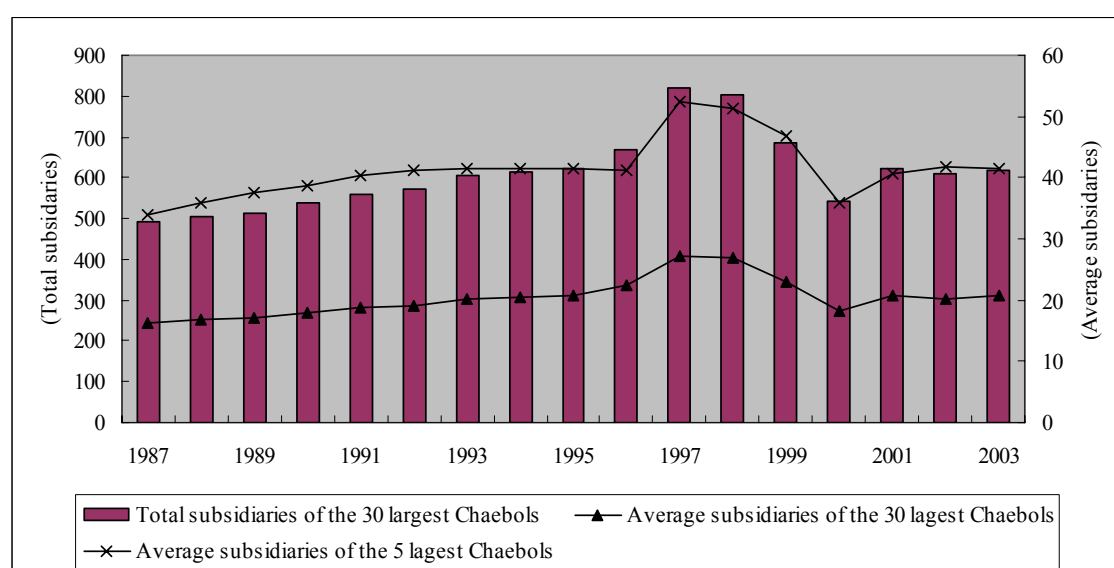
crisis, others have argued that the liberalisation of the domestic financial market without proper control resulted in the financial crisis (Stiglitz, 2000, pp.12-13, Radelet and Sachs, 1999, p.1076). In contrast, Chang et al. (1998, p.735) argue that the causes of the financial and economic crisis were not the high gearing financial structure of the Korean firms, but the failures of financial and industrial policies conducted by the Kim Yong-sam regime. Their analysis is based on the perception that Japan was remote from the financial crisis despite high leveraging structures of its firms, and their high interest payments did not necessarily impede the profitability of firms (Chang et al., 1998, p.742). Yet, when the financial crisis occurred, Japan was in the middle of an economic recession period, namely the 'lost decade, and was significantly influenced by the crisis, although it did not apply to the IMF for a bailout as analysed in Subsection 3.2.5.1.

Even though the Korean crisis might be a combined result of all of these factors, structural problems resulting from the Korean development path could be pointed out as a main cause of the crisis. The cases of Japan and Taiwan support this argument. As investigated in Subsection 3.2.5.1, Taiwan was much less affected by the crisis than Korea. This was mainly due to Taiwan's sound industrial organisation which was based on flexible SMEs and 'cool and distant relationship, resulting in its financial stability. In contrast, the high geared financial strategy of Japan made its economy vulnerable to any economic shocks. In the case of Korea, as analysed in Chapter Six, government incentives, representatively policy loans, were a basis for the growth of big business. Lack of domestic capital and the underdeveloped stock market prompted Korean firms to depend heavily on borrowing. In these circumstances, policy loans provided with significantly low interest rates were one of the most important financing sources to business. In addition, when economic crises occurred, the government had implemented special policy instruments such as the 8·3 Measure which were ultimately rescues for troubled businesses (see Subsection 6.4.6.2). Based on these accumulated experiences, the firms were insensible to increasing debts for the expansion and/or diversification of business (Park and Lee, 1998, pp.59-60).

Responding to the globalisation and liberalisation policies during the middle of the 1990s, the large Korean firms tended to diversify their business aggressively into more promising areas such as automobile manufacture, telecommunications, and

petrochemicals. However, their diversifications were not based on their core competences and/or technologies, but were to participate in industries where existing firms already made good profits (Chun, 2002, p.425). As Figure 33 shows, subsidiaries of the 30 largest Chaebol, reached a peak of 819 in 1997 from 490 in 1987. The five largest Chaebol had more than 52 subsidiaries on average, excluding their overseas subsidiaries as of 1997 (Song and Lee, 2005, p.51). This caused overcapacity in the targeted industries, which reduced the potential of corporate profitability (Chun, 2002, p.425).

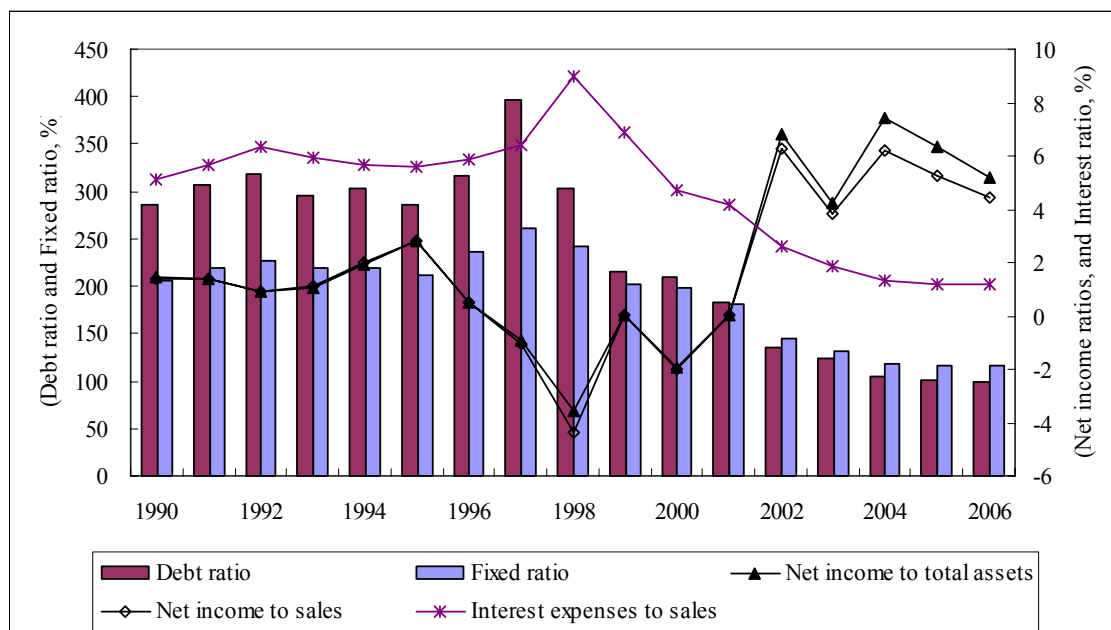
Figure 33 The Trend of Numbers of the Chaebol's Subsidiaries



Source: Song and Lee (2005, p.52)

Figure 34 shows that the weight of fixed assets against stock holders' equity considerably increased from 206 per cent in 1990 to 261 per cent in 1997. In addition, falling export prices in key industries, such as semiconductors, steel and petrochemicals, worsened the profitability and increased trade deficits (Park and Lee, 1998p. 56, Kim, 1998a, p.24). With a weak supply of cash from sales, a huge demand for capital for new investments had the large firms depend excessively on short-term borrowings. Consequently, net income to sales and net income to assets radically declined to -0.95 and -1.03, while debt ratio jumped to 396 per cent in 1997 from 207 per cent in 1990.

Figure 34 The Trend of Corporate Incomes and Debts



Note: 1. Debt ratio: Total liabilities / Stockholders' equity x 100

2. Fixed ratio: Fixed assets / Stockholders' equity x 100

Source: Bank of Korea (2007a)

Financial Market Liberalisation without Reforming Governance

President Kim Yong-sam attempted to change the legacy of the military juntas and to break a close relation between politics and business by introducing reforming policies such as a real name accounting system and a real name property ownership system. With this political and economic reformation, he tried to liberalise the Korean financial industry which had been under the strict control of the government and a source of preferential loans for big business. Paradoxically, financial liberalisation presented the Chaebol with a good chance to establish financial subsidiaries, which were a main channel of financing for the Chaebol (Park and Kim, 2004, p.1146, Lim, 2004, pp.292/297). The non-banking institutions, in particular merchant banks, introduced short-term foreign credits to make long-term investment loans. Moreover, the liberalisation policy allowed private corporations to directly borrow foreign debts which led to the sharp increase of short-term foreign debts by, for example, issuing overseas corporate bonds and borrowing short-term foreign debts by their overseas subsidiaries (Chun, 2002, p.427, Park and Lee, 1998, p.60).

Consequently, as shown in Table 23, net foreign assets recorded minus USD 46 billion in 1996, a decrease of USD 28 billion since 1994, and reached minus USD 68 billion in 1997. The financial sector and the private corporations led the negative foreign assets. The significant increase of short-term foreign debts from USD 38.5 billion in 1994 to USD 75.8 billion in 1996 added a financial risk to the Korean economy. Radically increasing trade deficits in part contributed to the financial imbalance of Korea recording minus USD 21.1 billion in 1996 from minus USD 4 billion in 1994.

However, proper governance and regulation for the soundness of financial and non-financial industries did not accompany the financial liberalisation. A close relationship between the state, financial institutions, and large business formed during the developmental state was still a basis of their strategic decision making. The financial institutions pursued high risk and high profit strategies depending on an implicit payment guarantee of the government (Chun, 2002, p.430, Park and Lee, 1998, p.59). The checks and balances by financial institutions against borrowing firms were not appropriately implemented, nor was the supervision by stockholders activated despite the development of the Korean stock market (Chun, 2002, p.429). This encouraged the rent seeking behaviour of firms, such as the excessive expansion into high risk and high profit industries, mostly depending on borrowings from the financial institutions (Park and Lee, 1998, p.60). This event illustrates that liberalisation itself could not automatically bring an economic and/or social equilibrium without proper governance for monitoring the behaviour of the significant market players and promoting the participation of the diverse actors in the strategic decision making.

Table 23 The Movement of Foreign Debts and Trade Deficits

	(Unit: USD million)						
	1994	1995	1996	1997	1998	1999	2000
Net External Assets	-18,270	-25,420	-46,243	-68,082	-34,532	-6,841	18,835
- The governmental sector	16,010	23,520	24,272	-7,563	8,862	38,398	61,789
- The financial sector	-17,359	-27,936	-39,902	-24,116	-13,646	-15,789	-12,527
- The private corporations	-16,922	-21,004	-30,612	-36,402	-29,748	-29,450	-30,427
Current Account	-4,024	-8,665	-23,120	-8,287	40,371	24,521	12,250
- Goods and services account	-4,817	-7,343	-21,256	-6,456	42,689	27,812	14,105

Source: Bank of Korea (2007b)

8.3.1.3 The IMF Programme as a Condition of Bailout

The policies of the IMF broadly consist of macroeconomic stability by controlling inflation and decreasing fiscal deficits, trade and capital account liberalisation, and product and factor market liberalisation based on the ‘Washington Consensus’ (Gore, 2000, pp.789-800). The IMF economic programme suggested as a condition to bailout the troubled Korean economy did not deviate from the consensus. The IMF propelled the sharp increase of interest rates, a tight fiscal policy by increasing taxes and decreasing the government expenditure, the restructuring of Korean financial institutions and corporations, and the liberalisation of trade and capital accounts as shown in Table 24.

Table 24 The IMF Economic Programme to Bailout the Korean Financial Crisis

Classification	Major Programmes	Specifications
Macroeconomic Programme	Monetary and exchange rate policy	<ul style="list-style-type: none"> o A tight monetary policy and interest rate increase - Containment of inflation to 5 % in 1998 - Sufficient interest rate increase and flexible exchange rate - Reduction of money growth(M3) from 16.4 % at end-September 2007 to 15.4 % at end-December 1997
	Fiscal policy	<ul style="list-style-type: none"> o A tight fiscal policy to alleviate the burden on monetary policy and provide for the costs of the financial sector - An increase in taxes such as the transportation tax, the corporate tax, the income tax and the VAT - Special plans to decrease the government expenditure including net lending and capital expenditure
Restructuring Programme	Financial sector restructuring	<ul style="list-style-type: none"> o Restructuring troubled financial institutions and opening the financial market - Rehabilitation or closure of merchant banks - Merging commercial banks and/or restoring profitability - Allowing foreign entry into the mergers - Establishing a consolidated supervisory agency and strengthening the independence of the central bank
	Other structure measures	<ul style="list-style-type: none"> o Trade liberalisation - Eliminating trade-related subsidies, restrictive import licensing and the import diversification programme o Capital account liberalisation - Allowing foreign entry into the financial sector including mergers, bank subsidiary establishment, and equity purchase o Corporate governance and information - Improving transparency of key economic data including corporate balance and short-term external debt - Reducing the high debt to equity ratio of corporation

Source: the Government of Korea (1997)

In addition, the IMF programme brought about the massive restructuring of the private sector, including the closure, merger or acquisition of 596 financial institutions and the dissolution of a large number of companies such as the Daewoo Chaebol. The restructuring forced a large number of employees to leave their jobs. Even though the restructuring of the public sector was not included in the IMF economic programme, the Kim Dae-jung regime rigorously pursued it. This was mainly because the neo-liberal ideology dominated the economic restructuring policies in which the privatisation of public corporations and the decrease of the governments' role were one of the main themes. This inevitably influenced the water industry.

8.3.2 E1: The Privatisation in the Wastewater Sector

8.3.2.1 A Dominant Privatisation Network and Little Competition

In 1997, the ME introduced the privatisation of the management of STPs and divested the STP operating division of Environmental Management Corporation, a state-owned corporation. As a result, 46 per cent of STPs were contracted out and 14.5 per cent were operated by independent local public corporations as of 2006.

Water pollution events and decreasing water demand since the beginning of the 1990s have increased the resources of the ME. These external events allowed the ministry to merge the Water and Wastewater Works Bureau from the MLTM in 1994 by which it entered the stage of the water industry as a major actor. The ME could gain influential power to allocate the subsidies of the central government to local water projects even though the MPAS determined the ceiling of the total subsidies for the water projects. Nevertheless, the ME has shared a control over the whole water industry and water resources management with other ministries such as the MLTM and the MPAS. Consequently, the ministries experienced fierce competitive relationship with each other.

In this context, the ME adopted a privatisation policy of STPs by establishing the 'Privatisation Guideline of Sewerage Plants' in February 1997. The IMF crisis provided a favourable environment for the policy and the ME like the case of the English and Welsh water privatisation, which was backed by a financial crisis in the UK (see

Subsection 3.3.2.1). The Kim Dae-jung regime strongly propelled the privatisation including telecommunications, gas and electricity. Consequently, the privatisation of the STPs was relatively successful so that 46 per cent of the STPs are operated by private companies and 83 BTO¹⁴⁹ projects were under the contracts as of 2006.

The privatisation policy of the STPs was not abruptly developed. The ‘Promotion of Private Capital into Social Overhead Capital Investment Act’ enacted by the Ministry of Finance and Economy (a predecessor of the Ministry of Strategy and Finance) in 1994 was the first step in promoting private investment in infrastructure (Ministry of Strategy and Finance, 2007). Much research on public utility privatisation was carried out by state and private research institutes and many economists, based on neo-classical economics during the 1990s. However, the privatisation of the water sector did not attract much attention from academics and economic bureaucrats. Meanwhile, a few studies on the privatisation of the water industry were carried out by the Korea Environment Institute (KEI) and a few academics in the mid-1990s. They suggested that privatisation was a viable option even for drinking water supply services which were strongly regarded as a local public service. Especially, KEI, having a close relation with the ME as a national research institute, plays an important role as a policy developer for the ministry¹⁵⁰. The research of KEI became a basis of the privatisation policy of the ME.

The ME introduced the policy without wide, or deep consultation with diverse interest groups such as experts, NGOs, labour unions, and even the local governments. A leading consultant, who has advised the central and local governments, stated:

At that time (when the privatisation of STPs was introduced), one or two seminars were held. Afterward, a certain local government adopted the privatisation, and then the privatisation continuously spread because companies constructing the STPs intended to operate those.

¹⁴⁹ Build-Transfer-Operate

¹⁵⁰ KEI had been under the control of the ME until January 1999 when transferred under the Prime Minister Office and still has carried out many research projects of the ME.

The ME's approach was more or less heavy-handed. Nonetheless, there was little opposition against the privatisation of the STPs. Rather, the MPAS and the local governments welcomed the policy. A senior research fellow from Seoul Development Institute, who has researched the wastewater sector since the 1980s, mentioned:

When the privatisation was introduced ... the ME privatised the STP operating division of Environmental Management Corporation. Many interest groups like the MPAS and NGOs might be positive about the privatisation because the privatisation was attempted to improve efficiency and to save budgets.

A director of Korean Government Employees' Union vividly stated about the response of the local governments by illustrating the Nonsan case as follows:

At that time, Nonsan had two STPs. Those who worked at the STPs were two managerial officials, the head of each STP and two or three technicians. So nobody had interests in the STPs. Most civil servants thought that they would have little chance to work at the STPs. When privatised, most of them moved to other departments within the Nonsan city government. So there might be no arguments about the privatisation.

Managers from the private operating companies unequivocally said in interviews that they did not experience severe conflicts with interest groups when they contracted and took over the operation and management of the STPs after the privatisation. In addition, the external event, the IMF crisis, legitimised the restructuring of the public sector. The MPAS propelled the 10 per cent reduction of local civil servants and the closure of 321 village offices serving lower than 5,000 residents (Son, 1998, p.22). In line with this, the MPAS set up a guideline of personnel management that 'the ministry does not allow local governments to allocate local civil servants to the STPs' (Yeon, 1997, p.31). The Prime Ministry Office recommended the privatisation of the STPs in a meeting for 'the 1997 Performance Evaluation on the Major Governmental Policies and Works' (Park, 1998a, p.6). This context provided the ME with dominant resources based on which the ministry did not need to broaden its network and directly controlled the decision making on the privatisation policy. Consequently, the policy was introduced and implemented without significant objections of other actors and networks.

8.3.2.2 The Successful Introduction of the STP Privatisation

As of May 1997, only 28 STPs in industrial sites were operated by private corporations. The ME ordered the contracting-out of the STPs in provinces and metropolitans in a directors' meeting of metropolitan and provincial environmental and sanitary bureaus on 22 January 1997 (Jo, 1997, p.25). The minister of the ME, Choi Jae-wuk, stated in a meeting organised by the Korean Chamber of Commerce & Industry:

At present, only 28 STPs are contracted out, but (The ME will) extend the contracting-outs to 356 sewage treatment and livestock excreta treatment plants by next year. And (it will) confidently drive private investment for new plants. (Park, 1997, p.28)

A step-wise privatisation plan, the Privatisation Guideline of STPs, followed in February 1997. The plan firstly targeted 74 newly constructed STPs and livestock excreta treatment plants which were estimated to require around two thousand employees (Chang and Jung, 1997, p.38). The second step was to contract out a further 547 STPs and livestock excreta treatment plants which would be built by 2005 and require 18 thousand workers. The third step aimed to privatise 925 operating STPs and livestock excreta treatment plants which employed around 15 thousand civil servants as of 1997 (Chang and Jung, 1997, p.38). The ME revised the Sewerage Act in 1997 in order to lower an entry barrier by allowing diverse construction and engineering companies to participate in the STP operating market. In addition, it intended to promote the participation of private companies by 'providing an international rate of return of 18 to 20 per cent' (Maeil-gyeongje, 1999a, p.1) and 'extending contract periods from three years on average to more than 15 years' (Chang and Jung, 1997, p.45). This effort was successful in attracting the private sector's interest and in driving the local governments to contract out their STPs.

To illustrate, the Gwangju Metropolitan government firstly introduced a management contract of its STP having the capacity of 600 thousand m³ per day. The metropolitan government set a contract period of three years and employed a settlement-based price which was designed to annually adjust total expenses in order to reduce risks, even though the ME recommended a long-term contract and a fixed unit price to facilitate cost efficiency (Chang and Jung, 1997, p.57). This was because the local government

intended to reduce risks resulting from lack of experience and uncertainties. Moon et al. (1999, pp.109-110) positively evaluated the Gwangju case which reduced the workforce from 113 to 65 persons and total costs by 29.6 per cent. Nonetheless, the Gwangju Metropolitan government established a public corporation, Gwangju Environmental Installations co, in 2002, which took over the operation of the STP.

By November 1999, 16 STPs with a capacity of 1,800.5 m³ per day were contracted out which accounted for 14 per cent of the total numbers of STPs and 10.8 per cent in total capacity (Moon et al., 1999, p.108). The share of the contracted-out STPs has significantly increased since then so that the STPs operated by private companies reached 147 (46 % in total number of STPs) with a capacity of 8,299 thousand m³ per day (36 % in total capacity) in 2006, as shown in Table 25. The ME (2007d) argued that privately operating STPs are more cost effective than STPs directly operated by the local governments by 15 per cent in unit costs and 20 per cent in biochemical oxygen demand treatment costs. However, some local governments differently interpreted the cost effectiveness which is likely to result from the companies' negligence of repairing and maintaining the STPs (refer to Subsection 8.3.2.4).

Table 25 The Status of the STPs as of 2006

	No. of STPs	Capacity (1000m ³ /day)	Mean Capacity (1000m ³ /day)	Unit costs (KRW/m ³) ¹⁵¹	BOD treatment costs ¹⁵² (KRW/kg)
Total	318	22,948.9	72.2	87.6	727.5
Direct operation	126	8,408.9	66.7	100.0	883.2
Private operation	146	8,296.3	56.8	86.0	698.9
Operation by public corporations	46	6,243.8	135.7	69.7	544.9

Source: The Ministry of Environment (ME, 2007d)

With the contracting-out of the STPs, the ME propelled private investment for the construction of STPs by introducing Build-Operate-Transfer contracts. After surveying the demand of the local governments in 1997, the ministry chose 22 projects which suffered due to the lack of budget of the local governments (Chang and Jung, 1997, p.51). The private investment projects were generally designed to attract 30 per cent of total construction costs¹⁵³ from the private sector and to subsidise 70 per cent by the

¹⁵¹ The exchange rate of December 2006 was KRW 1,824.11 per GBP.

¹⁵² BOD stands for biochemical oxygen demand.

¹⁵³ The local governments excluding metropolitans and large cities have to invest only 30 per cent of the total construction costs while 70 per cent of the costs are subsidised by the central government. The

central government¹⁵⁴. The privately invested capital was planned to be amortised by the local governments. The total construction costs of the 22 model projects were estimated to be KRW 329.7 billion (GBP 141 million at the rate of December 1997) while the private investments were equivalent to KRW 98.9 billion (GBP 42 million). Due to lack of budgets of most local governments, the private investment projects frequently activated. As of December 2004, private companies were investing KRW 677 billion (GBP 337 million at the rate of December 2004) for 83 projects. However, the share of private investment was only 29 per cent in total construction costs of KRW 2,358 billion (GBP 1,174 million) as shown in Table 26.

Table 26 On-going Private Investments in STPs (2004)

	(Unit: 1000 m3/day, KRW billion ¹⁵⁵)					
	Numbers of STPs	Total Capacity	Total costs	Subsidy	Local Budgets	Private Capital
Sum of Proposals	83	2,099	2,358	1,099	1,259	(677)
Private Proposals	62	1,683	1,846	835	1,012	(569)
Governmental Proposals	21	416	511	263	248	(108)

Note: 1. Private proposals refer to projects proposed by private companies.

2. Governmental proposals refer to projects proposed by the government

Source: Ministry of Environment (ME, 2005c, p.543)

8.3.2.3 The Advent of Operating Companies

The pinnacle of the STP privatisation policy was the privatisation of a subsidiary of a state-owned corporation. The ME forced Environmental Management Corporation to separate its STP operating division in 1997, and then to privatise it in 2000 as an employee owned company despite severe resistance from the labour union of Environmental Management Corporation. A senior manager from the privatised company, Environmental Facilities Management Corporation (EFMC) stated, "When EFMC was privatised..., the labour union of Environmental Management Corporation strongly resisted, but due to the dismal situation of the IMF period, (the privatisation was) propelled

private investment scheme for the STPs aims to attract private investments on the local governments' share in the costs.

¹⁵⁴ The private investment projects are classified into two types: projects carried out by the Comprehensive Water Management Plan and general projects. The central government immediately subsidised the first type of projects while it planned to subsidise the second type of projects within five years after completing the construction of the STPs. Thus, in the second case, private contractors should invest 100 per cent of total construction costs in advance.

¹⁵⁵ The closing exchange rate of December 2004 was KRW 2,009.0 per GBP.

according to the will of the ME." Nonetheless, EFMC become a leading company in the STP operation market. He explained the reason as follows:

At the beginning of the privatisation, (we) worked really hard. (We had about) 10 persons in the headquarters. (We) could not survive without contracting with local governments to operate STPs. Probably, the desperate environment became soil for achieving a little success now.

Many large companies such as Hansol Paper showed their interest at the beginning of the privatisation. However, only three companies, namely Clean Water Co., EFMC, and Taeyoung E&C, actively participate in the market. This is partly because of the small scale of the market, which is around KRW 585 billion (GBP 321 million at the rate of December 2006) per year. In addition, only 45.9 per cent of 318 STPs were open to private companies as of 2006. The senior manager from EFMC said, "Due to inferior profit structure, competent companies could not have been fostered." Except for EFMC, two other major operating companies are rooted in construction and engineering business including environmental plants and facilities. A manager from Taeyoung E&C stated the main motive of the construction companies to be interested in the non-profitable market as follows:

First of all, construction companies could expect some opportunities from the STP management contracts. That is, the records of operating STPs help the companies develop new (construction) contracts and build reputation as environmental companies.

Clean Water Co., another major operating company, is a subsidiary of one of the largest construction and engineering companies, Daewoo E&C. Clean Water Co. has the largest share of capacity in the STP operation market, but it mainly focuses on new STPs constructed by its parent company. Its senior manager said, "Most of STPs operated by our company are newly constructed plants except two." In fact, only 24 out of 146 STPs operated by private companies as of 2006 were constructed before the privatisation. That is, most management contracts have concentrated on the new STPs.

Table 27 shows the poor structure of the STP operation market. Based on the aggregated capacity of STPs, two employee-owned companies in Seoul share 37.4 per

cent of the total capacity operated by private companies. As a result, only 22.6 per cent of national capacity is open to the bidding market where Daewoo E & C and its subsidiary share 8.1 per cent in the national market, EFMC serves 5.5 per cent, and Taeyoung E&C takes 2.2 per cent. More than other 30 companies compete within the residual market.

Table 27 Shares of Private Companies in the STP operation market (2006)

(Unit: thousand m³ /day, KRW billion¹⁵⁶)

	No of STPs	Total Capacity	Mean Capacity	Treatment Costs
Total	146	8,296	56.8	208
EOCs ¹ in Seoul	2	3,100	1,550.0	66
Daewoo E & C	15	1,856	123.8	34
EFMC	46	1,283	27.9	34
Taeyoung E&C	26	510	19.6	18
The others	57	1,547	27.1	55

Note: 1. EOC refers to Employees' Owned Company. The Seoul Metropolitan government has four STPs two of which are operated by EOCs. The other two are directly operated.

2. Daewoo E & C mostly entrusts the operation of STPs to its subsidiary, Clean Water Co after construction, even if it remains as an official contractor with the local governments.

Source: Ministry of Environment (ME, 2007a)

8.3.2.4 The Counteraction of Local Governments

Another significant reason why the operation market has not been so active is most likely the counteraction of the local governments. At the beginning of the privatisation, many local governments entrusted their STPs to private companies. However, some, in particular the metropolitans, retrieved the STPs from the companies. A manager from EMFC illustrated:

A representative example is Gwangju Metropolitan city. Gwangju had entrusted its STPs to private companies in the period of privatisation, but established a public corporation to take over the STPs. In addition, Daegu Metropolitan city and Busan Metropolitan city founded public corporations. Afterwards, many small and medium local governments have followed this trend. As a result, private companies have become shrunk.¹⁵⁷

¹⁵⁶ The closing exchange rate of December 2006 was KRW 1,824.11 per GBP

¹⁵⁷ The Gwanju, Daegu, Busan and Daejeon Metropolitan governments established local public corporations to manage and operate their STPs most of which were contracted out to private companies. Seoul handed two of its four STPs over to employee owned companies: Tancheon com. and Seonam

This tendency of the local governments has become one of the most serious threats to the operation companies. A senior manager from Clean Water Co. stated:

After finishing management contracts for STPs, many local governments established public corporations to manage the STPs and directly operate the STPs. That is a more serious problem.

The reason why these local governments are reluctant to consign their STPs to private operators is based on the perception that the private companies excessively pursue profitability and do not properly maintain the facilities. A member from Daegu Metropolitan city said:

(We have) attempted to make management contracts with private companies for some facilities such as STPs. However, (they place) too much emphasise on profitability, which impedes public interest (Maeil-gyeongje, 1999b).

This perception is supported by an interviewee, a director of Daejeon Metropolitan City Facilities Management Corporation, who stated:

Management contracts with private companies aim to secure public interest, but pursuit of profit is likely to be prioritised. Recently, a local government entrusted its STPs to a private company, but the company has not properly repaired and maintained the facilities of the STPs.

However, the private companies differently interpret the corporatisation strategy of the local governments. The senior manager from Clean Water co. believed:

(The reason is that) the governors elected by direct elections want to expand subsidiaries like public corporations and civil servants want to make more places for promotion.

Environmental Technology while it directly operates the other two. Incheon Metropolitan city made two BTO contracts with Veolia Water Korea and Samsung Engineering and entrusted one STP to Daewoo E&C and Peniel Water, whereas it manages the other two STPs.

Apparently, the private operating policy of STPs created a new actor, private operation companies, which are probably strong supporters of the privatisation policies developed by the ME. Nonetheless, counteraction of the local governments having ultimate decision making power does not allow the privatisation policy to be dominant.

8.3.3 E2: The Liberalisation of Water Supply Sector

8.3.3.1 The ME's Announcement of the Water Supply Sector Privatisation

The appointment of a new Director General of the Water and Sewerage Bureau of the ME, Namgung Eun, who was a vice director of Asian Division of Proctor and Gamble, became another driver of the privatisation of the water sector. When appointed as the Director General in September 2000, he said:

The management and operation of potable water are separated into the central and local governments etc, so in fact, the efficiency is low. (I will) prepare a scientific and reasonable management policy and entrust one or two water supply systems to private companies as a model case (Bae, 2000, p.19).

The following year saw the ME's announcement of the comprehensive privatisation of the water and wastewater sectors. The ME aimed to combine the water and wastewater sectors and integrate them based on the four large river basins, while it targeted the management and operation by the private sector in the short term and the transfer of ownership from the governments to the private sector (ME, 2001c). The ME's policy seemed to follow the model of the English and Welsh water sector, which integrated fragmented water services into 10 regions and sold their assets to private firms (see Subsection 3.3.2.1 and 3.3.3.1). In line with this, the Director of Water Policy Division, Ju Bong-hyun, said in the announcement:

If the water and wastewater sector are privatised, service areas will be integrated and multi-regionalised based on river basins, and (it) will reduce overall costs and help water related industries participate in the overseas market (Oh, 2001).

In the course of the formation and implementation of the privatisation policy, KEI and the Environment Management Corporation played significant roles as members of the pro-privatisation network. To illustrate, KEI carried out a research project, 'A master plan for the water and wastewater privatisation (Moon et al., 2001)' in 2001 to support the ME's policy. The research does not suggest a concrete strategy of privatisation, but proposes diverse types of the privatisation and ways of regulation. Environmental Management Corporation was also involved in the research as a financial supporter and contractor. Nonetheless, the network did not try to convince and/or attract other actors to support its policy idea. An advisor for the central and local governments pointed out:

At that time, the ME announced the privatisation policy without any discussion. ... The ME strongly drove the privatisation policy. The General Director, Namgung Eun, said that as long as he was in charge of the bureau, the corporatisation (of water services) was impossible and privatisation was the policy.

On the other hand, the major sewage operating companies such as EFMC, Taeyoung and Clean Water co. did not actively respond to the water privatisation policy. A senior manager from Clean Water co. said, "We have not much interest in namely, the privatisation of the water supply sector. I wonder if it is really carried out for private companies. We have the fundamental question." Another senior manager from EFMC adds, "Year 2001 was long before we considered the water supply market."

The cold response from the private companies was most likely due to their doubt about the ME's truthfulness and capability, and the perceived barrier of Kwater. The manager from Clean Water co. articulated, "There is no case that the local governments place their water supply services in the bidding market. ... If (the ME) privatises the local water supply systems, that is for Kwater." Consequently, despite the ME's strong drive for the privatisation of the potable water supply sector, private companies could not participate in the water supply sector as of 2010.

8.3.3.2 The Formation of a Pro-corporatisation Network

Like the regional and local governments in Italy (see Subsection 3.3.2.2), the MPAS and local governments have had strong veto power against the ME's policy. Contrary to

its response to the wastewater privatisation policy, the MPAS robustly opposed the privatisation of the water supply sector. Through research carried out by Korea Local-government Management Institute in 2001, the ministry set up a policy direction towards corporatisation. The research (Baek et al., 2001) proposed regional corporatisation which integrates the local water supply systems and organisations into around 30 large regions based on large river basins and corporatises the integrated water suppliers. Their argument (Baek et al., 2001, pp.202-204) is founded on the perception that privatisation cannot be always superior to corporatisation in cost efficiency, but is inferior in protecting public interest in Korean context. As a first step, the ministry aimed to corporatise the metropolitan water authorities (Jo, 2004, p.7). It launched another research project, 'A strategy for the efficient corporatisation of the local water sector'. The research (Kim et al., 2004) intended to establish a concrete action plan including a legal procedure, regulatory framework and promoting incentives.

In fact, attempting to corporatise the local water authorities has a long story. Seoul, the capital city, has considered corporatisation since 1984 when it corporatised Seoul Metro, the underground railway. However, its dismal experience in the strike of Seoul Metro Union in the late 1980s and employees' opposition within the water authority delayed the corporatisation. An ex-director from Seoul Metropolitan Water Authority testified:

The Seoul Metropolitan government had a basic trend to corporatise its water authority and built a task force. However, strikes of Seoul Metro Union provoked serious social concerns. Many worried about stopping water supply resulting from strikes in the water sector. As a result, the corporatisation was cancelled.

Nonetheless, the metropolitan government has tried to improve the efficiency of the water supply authority. It researched 'Efficient management of Seoul water supply system: establishing water leak detection and repair companies' which focused on outsourcing strategies of maintenance and construction work in 1997. The corporatisation and/or contracting-out have been a main restructuring issue of the metropolitan government, whenever newly elected mayors took office. To illustrate, the 31st Mayor Go Gun (July 1998- June 2002) planned to corporatise the water authority in 1998 (Kim, 1998b, p.2). He organised a forum for discussing strategies of management innovation and reorganisation which included corporatisation and contracting-out in

1999 (Kim, 1999a, p.24). The 32nd Mayor Lee Myung-bak (July 2002-June 2006), the present president of Korea who was elected based on a business-friendly manifesto in 2007, had a strong intention of reorganising the water authority. He pointed out, “Seoul city government has not overcome the bureaucratic inclination during the period of government-selected mayors” (Lee, 2002, p.20). He set the corporatisation as a policy for the water supply system in 2002 (Lee, 2002, p.20). A survey of 43 experts from the governments, research institutions and universities followed (Kim, 2007d, p.16) and research for the reorganisation was carried out by Seoul National University Business School in 2003. However, he failed to corporatise the water authority largely because of ‘the opposition of the labour union of the water authority’ (Kim, 2007d, p.16). The corporatisation policy of Seoul entered a second phase by a new water industry policy suggested by the central government in 2006. The next section analyses the industrial policy, its causes and influences, and the advent of new actors and their interactions more specifically.

8.3.3.3 The Dominance of a Stepwise Competition Policy

Professor Park Hee-kyung’s research, ‘A study on a water industry reorganisation strategy,’ was a turning point which practically and analytically advanced existing reorganisation strategies¹⁵⁸. He (Park, 2003a, pp.225-238) suggests a self-reorganisation policy by which the local water authorities and Kwater are allowed to choose their own reorganisation strategies. He (2003a, pp.225-238) suggests a self-reorganisation policy by which the local water authorities and Kwater are allowed to choose their own reorganisation strategies. He argues that the central government should take the role of facilitator for the reorganisation of the water industry rather than organiser or implementer of a specific strategy such as a river basin based privatisation or a regional corporatisation. A stepwise reorganisation strategy proposed by the research (pp.225-238) gained the sympathy of many academics and experts. The first competition stage of the stepwise reorganisation strategy implies the competition among the corporatised metropolitan water authorities and Kwater. The second competition stage refers to the competition among public authorities, Kwater and newly entered private companies.

¹⁵⁸ In fact, Professor Park was one of the first experts who proposed the water sector privatisation in a book in 1999 (Park and Choi, 1999). He might revise his opinion by reflecting on main actors’ response and current context of the Korean water industry.

In the same vein, Professor Lee Dal-gon (Lee et al., 2004a, pp.202-212) from Seoul National University introduces a public competition model where large public corporations and authorities compete to make management contracts with the small and medium local governments. The model also considers stepwise competitions which evolve from limited competition between public organisations to comprehensive competition among public and private institutions for the market.

This policy idea was accepted by several key experts such as Kim Gil-bok and Moon Hyun-ju. Research led by Kim Gil-bok advanced a competition model within the public sector even though it did not consider privatisation. The research (Kim et al., 2004, pp.78-134) suggests that the large water supply authorities such as seven metropolitans and a few large cities need to be corporatised and to be developed as leading corporations. The small and medium water authorities should integrate, cooperate together, and/or be entrusted to the leading corporations through bidding competition according to the research.

Moon Hyun-ju (2004, p.10) reported a stepwise privatisation policy in a public hearing of ‘A study for the comprehensive national water supply plan’ in December 2004. She divides the privatisation process into two stages: the first stage of developing specialised leading corporations and the second stage of expanding competition. In the first stage, leading organisations such as metropolitan water suppliers cannot only be public entities like local public corporations, but also take diverse forms such as regionally integrated organisations, regional water boards, and private and public partnerships. In the second stage, the leading corporations should be privatised and the market will be converged to competitive corporations. The 2007 Comprehensive National Water Supply Plan partly reflected her suggestion. To illustrate, the plan (ME, 2007e) includes the development of large water authorities as leading corporations, and gradual and autonomous restructuring of the water industry. Even though the pro-privatisation network and the pro-corporatisation network have quite different beliefs and preferences, they tend to reach a broad agreement about the short and medium term policy of the water industry restructuring.

8.3.3.4 The Active Participation of Kwater in the Water Supply Market

The opposition of the pro-corporatisation network and its influential power over the water supply industry created a favourable environment for the state-owned water corporation, Kwater. This was similar to the Italian water sector, where concession to public or mixed public-private firms and in-house providing were popular, due to the objection of regional and local governments against privatisation as analysed in Subsection 3.3.2.2. Kwater which has confined its business within multi-regional water supply is allowed to enter the local water supply market due to the 2001 revision of the Water Act. Kwater made a 30 year concession contract¹⁵⁹ with Nonsan city in December 2003 which is the first long-term concession contract in the Korean water industry. The main reasons why Nonsan city government chose the concession contract were bad water quality resulting from old pipes and its lack of capital to replace them. The head of the Nonsan Water Supply Office said:

In 1998 ..., I worked at the (Nonsan) Water Supply Office and made a plan for the replacement of old pipes and the introduction of an automatic operation system. We estimated around 52 billion Won (GBP 25.6 million). But we concluded it took too long time to secure budget and raise capital. ... The reason why Nonsan city entrusted its water supply system to Kwater is a problem of budget. And we suffered from very many complaints about water quality (from citizens). Sometimes black water was produced.

In addition, after annual performance evaluation on the Nonsan Water Authority, the MPAS made a management improvement order in May 2003 which drove Nonsan to make a concession contract with Kwater. The order (Chungcheongnamdo, 2003) documented high water leakage, low labour productivity, and old pipes and water treatment plants as fundamental problems. It forced Nonsan to implement the closure of Gangyeong water treatment plant, the consideration of the closure of Nonsan water treatment plant, and the replacement of the old distribution network. Kwater had made concession contracts with 11 local governments including Nonsan city and memorandums of understanding with other 33 local governments as of 2007.

¹⁵⁹ The concession contract covers a water supply system of 45,340 m³ per day which includes a water intake facility, a water treatment plant, five pumping stations, six water distribution reservoirs and 419 km of pipes. It supplies water to 78 thousand citizens, invests KRW 56 billion in rehabilitation and pays KRW 9.8 billion per year to Kwater based on 2003 constant prices.

8.3.3.5 The Emergence of Labourers' Collective Concern

When the ME announced the privatisation policy of the water supply sector in 2001, labour unions and NGOs showed little interest. A director of the Korean Government Employees' Union explained,

Korean Government Employees' Union, which had been called an illegal organisation by the government, was created after 2000. ... In this situation, we started learning overseas cases and feeling serious problems caused by privatisation.

An advisor for the central government said:

This is the first time for (national) NGOs to have interest in the water industry (in 2007 when the government adopted a water industry promotion policy). The NGOs have usually taken actions for water quality and did not have any interest in the water industry at all.

Nonetheless, one of the most important factors for concession contracts is to protect job security and wage levels. The head of Nonsan Water Supply Authority said:

The most serious issue was employment succession. When the transfer of civil servants from Nonsan city to Kwater was discussed, many civil servants doubted whether job security can be protected until they retire.

Kwater proposed and implemented an attractive employment succession programme which transferred workers to Kwater with job security and good working conditions. A union leader of Nonsan city agreed, "Kwater has properly kept promises. Transferred civil servants have expressed their great satisfaction because of salaries and working conditions." Nonsan concession contract has therefore become a model to other local governments. The union leader said, "Many civil servants from other local governments visited Nonsan city to investigate the first concession contract in the Korean water sector." Yet, he blamed the decision making process of the concession contract by saying:

Though (the Nonsan city government was) doing such a big thing, by a decision of a few top elites, whole things were propelled. Those things damaged the meaning of local autonomy.

He opposed the liberalisation of the water supply sector including the concession contracts and argued:

The labour movement excluding public interest has many problems. ... When I have met them (visitors from other local governments), I used to say that they must not consider the Nonsan case a model for the local water supply.

The first collective action of labour unions and NGOs occurred in Jeonju in 2005, as a vice director of the Water Privatisation Rejection Committee of the KGEU said, “Jeonju was a starting point. We started worrying about how much the public can be victimised.” The Jeonju city government attempted to entrust its water supply system to Kwater in order to reduce its increasing debt of KRW 40 billion and to attract new investment for the replacement of old pipes (Lee, 2005a, p.4). Similar to Nonsan, Jeonju water supply management recorded the poorest performance among local public corporations in 2004 (Park, 2005a, p.43). In contrast, Jeonju city branch of Korean Government Employees’ Union declared, “We considerably worry that the city government is confined within the logic of capital and market, and betrays public interest. We anticipate the suffering of citizens resulting from the increase of water price”(Park, 2005b, p12).

The resistance expanded to NGOs. 21 organisations including NGOs and labour unions created the ‘Committee on the objection of private water management and the enlargement of water public interest’ on 9 June 2005 (Park, 2005g, p.10). Due to the resistance, Kim Wan-ju, the governor of Jeonju, suggested the creation of ‘a cooperation committee of the city government and NGOs (Gil, 2008). The committee decided to cancel the concession contract plan (Gil, 2008). Consequently, Jeonju city prepared an investment plan of KRW 143.6 billion (GBP 77 million at the rate of December 2006) which would increase accounted water rate from 64.8 to 85 per cent in seven years until 2012 (Gil, 2008).

Namwon city next to Jeonju city experienced a similar dispute. Choi Jung-keun, the governor of Namwon city, had a strong will to propel the concession contract of the water supply system since 2006. He said, “If this is of use to citizens, I will go despite the objection (of NGOs) (Gil, 2008).” However, 21 NGOs and labour unions organised an objection committee in October 2007 and resisted the concession contract plan (Gil, 2008). Consequently, the Namwon Local Assembly decided to defer the concession contract plan in December 2007 (Gil, 2008). Although there have been a few demonstrations of labourers and NGOs in a local level, this did not attract much attention from national level NGOs and labour unions until the central government declared a water industry promotion policy in 2007.

8.3.4 E3: The Introduction of a Water Industry Promotion Policy

8.3.4.1 The Emergence of a Water Industry Promotion Policy

A news article, entitled ‘Water power is the wealth of nation. Catch the water’, became a turning point for the industrial policy of the water sector. The article (Park, 2005c) reported on the 2005 World Water Day, 22 March 2005:

Water is a future golden industry. Following black gold (oil), colourless gold (water) rises. ... According to the MLTM and Kwater, the monetary value of world water supply is estimated at 500 trillion won (GBP 286 billion at the rate of December 2005) per year. ... The Korean water market approximated at 8 trillion won (GBP 4.6 billion) suffers from the shortage of technological expertise and managerial mind.

On 24 March 2005 soon after President Roh Moo-hyun read the article, he ordered, “Water industry is a case having a great deal of weight. Check the state of the water industry policy”(ME, 2007f, p.5). An advisor vividly described the decision making process by saying:

President, Roh Moo-Hyun, called the Construction and Transportation Minister and ordered him to investigate the possibility of the water industry. Therefore, the MLTM might request the investigation to Kwater, and then the corporation contacted with me.

Accordingly, Kwater and I wrote a draft for the development of the water industry. However, the ME recognised the draft. It criticised, 'why did you do my job'.

Accordingly, the ME took charge of the Water Industry Promotion Policy (WIPP) and reported the WIPP to President Roh at a Cabinet Council Meeting on 14 February 2006, together with the MLTM and the Ministry of Commerce, Industry and Energy. A Five Year Water Industry Promotion Plan was prepared by the ME through another research project on 16 July 2007. The ME (2007g) announced the target of the plan after a meeting of the 'Economic Policy Adjustment Committee'¹⁶⁰ on 16 July 2007 as follows:

The government will integrate water and wastewater services, which are separated in more than 160 local governments, into less than 30 watershed regions. The government will encourage corporatisation or privatisation (of the integrated organisations). Besides, by developing core technologies, educating experts and fostering related industries, the government will build a foundation to make Korea a strong nation in the world water industry.

8.3.4.2 The Shift of a Main Decision Making Centre

This event shifted the power balance between ministries and allowed the ME to become an official decision making centre of the water industry policy. The advisor explained, "Now, the MPAS was out and the MLTM did not exist. The ME did this work, the water industry promotion policy, and it passed through the State Council on 14 February 2006." Nonetheless, the ME did not seem to dominate the decision making power even though other ministries had not explicitly opposed the WIPP. A senior manager from a private company said:

The ME has political will, but I doubt that the ME can realise the policy because the ME is weaker than other ministries. In fact, other ministries do not seriously consider the policy. ... Consequently, the problem is that an impelling force by the central government has not been activated.

¹⁶⁰ The committee is chaired by the Minister of Strategy and Finance, and consists of 14 related ministers and presidents of related monetary and economic organisations.

The ME had tried to expand a pro-privatisation network by leading several key organisations to become involved in the policy-related studies and holding forums. To illustrate, a study for the Five Year Water Industry Promotion Plan was carried out by Kwater, Environmental Management Corporation and Korea Water and Wastewater Works Association in 2006. Korean Society of Water and Wastewater conducted ‘A study on the roadmap of the water industry restructuring’ in 2006. After the studies, the ME has had the research organisations and researchers organise forums such as ‘A public hearing for establishing the Water Industry Act’ on 9 November 2007, ‘A public hearing for establishing a roadmap of the water industry restructuring’ on 20 October 2006, and ‘A public hearing for establishing the five-year water industry development plan’ on 24 November 2006.

The ME’s declaration about the WIPP and its consecutive governmental studies have generated significant attention from related experts and academics. Therefore, the WIPP has become a major issue of periodic conferences of relevant academic associations and water specified media such as Korean Society of Water and Wastewater, Korean Society of Water Quality, and Ecomedia. These conferences provided the ME and its supporters with chances to persuade regarding their policy ideas. Some experts and academics such as Kim Gil-bok, Son Jin-sik, and Park Seak-sun started supporting the WIPP through journals, newspapers and media. Private companies have been strong adherents of the policy too.

8.3.4.3 The Breakout of National Level Objections

The ME’s drive for the WIPP triggered the formation of an anti-privatisation network beyond local-level resistance against concession contracts. Korean Government Employees’ Union, a core of the network, organised ‘Common Action to Prevent Private Water Property and to Promote Social Public Interests (Common Action)’ with 22 NGOs on 21 September 2006. The Common Action declared:

The government attempts to entrust the local water authorities to Kwater, to introduce competition by corporatising local water supply systems, and to ultimately privatise

water. We will carry out diverse actions to expose the seriousness of water privatisation and to prevent it (Jung, 2006b).

Apparently, the liberalisation of the water industry including the concession contracts and privatisation, increases the employees' concern about the security of their jobs and financial rewards. A union leader said, "Finally, if (the water authority were) handed over, eventually, layoffs of civil servants would have started, because, as I said several times, to create profits, (the private company) could not help dismissing them." In fact, one of the hottest issues of Nonsan concession contracts was job security and wages as analysed. Accordingly, labour unions were at the front of the opposition to water industry liberalisation even though the movements had been limited within local areas before the WIPP was introduced.

Furthermore, the WIPP raised attention of social, economic and environmental NGOs. A leading environmentalist, the Director of Safety Water, said:

Due to the limitation of staff, it is difficult (for us) to systematically and quickly organise (something). In the meantime, Common Action was established by Korean Government Employees' Union. ... We participate in there. Many NGOs, from very progressive organisations to more or less conservative institutions, attend.

NGOs' participation led the issue to be more ideological. They have regarded water as a public good and human right. Yeom Hyung-chul, a leading environmentalist, (Yeom, 2007a, p.40) argued, "Apparently, the strong nation in the water industry is an attractive slogan, but it cannot be replaced with the public interest of the water industry." The Common Action or NGOs held consecutive forums in Seoul and other regions and took diverse action including issuing statements and demonstrations. They started actively being involved in the liberalisation programmes of local governments such as Naju city's plan of concession contract and Seoul's attempt at corporatisation.

Several newspapers have expressed their support for the anti-privatisation network. For example, Hankyoreh (2007, p.27) argued in its editorial that "Water supply should not be privatised. Water is not only a natural good, but also a public good. ... We cannot let water, a

source of life and a property of people, be handed over to capital and sold as a good.” Seoul-shinmun, another major Korean newspaper, wrote, “Our people have the deep rooted perception that water is a public good. That is the reason why water tariffs have not been realised.” Some academics and politicians against neo-liberalism support the anti-privatisation movement. To illustrate, Kim Sang-jong, a professor of Seoul National University, (2007c) argued by exemplifying the termination of the water concession contract in Atlanta USA that “The damage of water privatisation does not happen only in the third world, but it also occurs even if local governments regulate and control it.” Some assemblymen, such as Dan Byung-ho, Woo Wonsik and Je Jong-gil, have supported the forums organised by Common Action or NGOs. Shortly, the WIPP facilitated the formation of the anti-privatisation network. By expanding from local level to national level and from labour unions and NGOs to some experts and media, the network gained enough resources to compete with the pro-privatisation network. Nonetheless, debates between the pro-privatisation network and the anti-privatisation network have been in the stage of ideological arguments. Practical policy learning based on scientific analysis has not yet occurred.

8.3.4.4 The Participation of Big Business in the Water Market

The decision of Kolon, Chaebol, to participate in the water supply industry in 2006 was a big event which added momentum to the drive for the privatisation policy. This is because existing private companies have been not only concentrating in the wastewater operation market, but also perceiving the water supply sector as a public domain. As analysed, those companies have doubted the truthfulness of the privatisation of the water supply sector. In this context, Lee Woong-yeul, the chairman of Kolon, declared in a news conference for the 50th anniversary of the Chaebol in April 2007 that “We set the world top ten in the world water industry as a medium and long term vision” (Joo, 2007, p.18). A senior manager from the company said:

We have continuously investigated to find new driving forces for the growth of our group because our businesses are stagnant. Last June (in 2006), the ME announced the WIPP, so we studied what the water industry was and what figures we had. ... We realised that we had been doing water related businesses. We decided that the water industry could be a new driving force for the growth (of our group).

In fact, Kolon has conducted water related businesses including environmental engineering and construction, production of membrane and chemicals, and operation and information technology. To equip a comprehensive water business portfolio as a total water enterprise, the large business acquired EFMC, the largest STP operating company, at KRW 54 billion (GBP 29.6 million at the rate of December 2006) in November 2006 (Kim, 2007b). It has invested KRW 20 billion (GBP 11 million at the rate of December 2008) in water pipe manufacturing which aims to achieve KRW 25 billion (GBP 13.8 million) of sales in 2008 and KRW 150 billion (GBP 82.5 million) of sales in 2012 (Baek, 2007, p.1). In order to enter the Chinese water market, Kolon planed to set up a joint-venture company, China Water Management Company, with China Water Affair Group Limited (Financial News, 2007).

Yet, there is no case for private companies to participate in the Korean water supply market. This is not irrelevant to the fact that the anti-privatisation network has created a negative political climate to liberalisation. Jeonju's cancellation case of a water concession contract plan shows that systematic opposition of the anti-privatisation network significantly impacts on the water industry restructuring. The Korean water industry has experienced a similar case in Andong city having 170 thousand citizens. In addition, private companies perceive Kwater as a big barrier. The senior manager from Kolon said:

Kwater has prepared its participation in the local water supply market since a few years ago. ... For what I know, it already made 45 memorandums of understanding (MOUs) (with local governments) and planned to operate ten local water supply systems. Out of 167 local water systems, one fourth was already under the MOUs. ... The barrier of Kwater is too large.

Another senior manager from Clean Water agreed, "In the water supply sector, there exists a large framework, Kwater. The market size is not scattered like STPs, but a large scale. Therefore, private companies have some difficulties in that point." In addition, a senior manager from EFMC anticipated, "We foresee ... large cities will establish their own water public corporations. Kwater will take the large share in (the local water supply systems of) small and medium cities. For the limited, residual market, the private sector will compete."

Nonetheless, the growing intention of large business on the water industry has strengthened the pro-privatisation network.

8.3.5 E4: The Formation of the Present Governance of the Water Sector

8.3.5.1 The Present Organisational Structure

Both the present organisational structure and the institutional framework of the water industry are the result of intense interaction among actors and their response to changing context. The developmental demand in the industrialisation periods allowed developmental and economic actors to control decision making about water policies. Increasing concern about the environment and growing market pressure have provided the ME with good bases for expanding its influence in the policy making of the water sector. Several water contamination accidents at the beginning of the 1990s, drove the establishment of environment-oriented governance.

As shown in Figure 35, the ME started playing a central role for the water and wastewater service provision. The ministry is not only in charge of environmental regulation, but also policies and national plans for environmental protection, local water supply and sewerage. The local governments should secure the ME's approval for the maintenance plans for their water and wastewater services. The ME decides subsidies for the construction of water supply and sewerage facilities and approves the maintenance plans for local water supply and sewerage which the local governments should make and submit to the ministry every ten years. Furthermore, the ministry has significant influential power over large developmental projects, representatively dam construction.

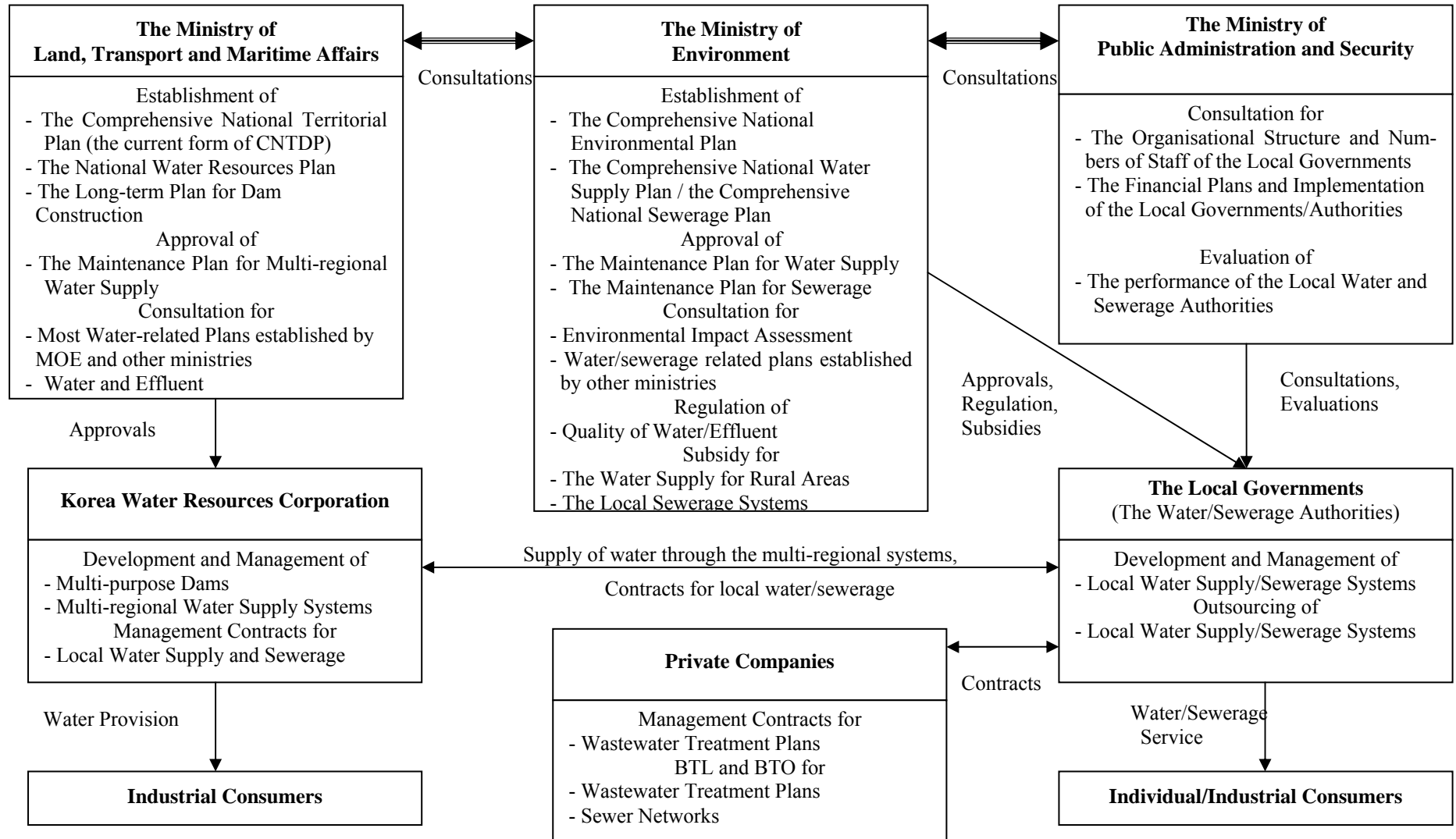
In contrast, the role of the MLTM in the Korean water sector has considerably decreased. This is largely because of increasing concerns about the environment and decreasing demand on water. Consequently, the ministry failed to construct new large dams during recent decades due to environmental movements. A representative event is the cancellation of the Yeongwol Multi-purpose dam (refer to Section 7.4). Nonetheless, the MLTM establishes national plans for land development, water resources

management and development and dam construction. It approves the maintenance plan for multi-regional water supply.

The influential power of the MPAS is still significant. The ministry evaluates the managerial performances of water supply and wastewater services authorities by which it can exercise management improvement orders and, in extreme cases, direct the closure of authorities and the transfer of services. The ministries should have consultation with related ministries and try to reflect the consultation results.

The local governments are legal providers of water and wastewater services, although some of them entrusted STP and/or water services to other public or private firms. One peculiar feature of the recent water sector in Korea is the advent of private companies in the wastewater sector and their attempt to participate in the water supply sector. The private companies already operate more than 40 per cent of wastewater treatment plants and have actively taken part in sewer network BTL projects. Kwater is in charge of the development and management of multi-purpose dams and multi-regional water supply systems. Yet, the business focus of Kwater has changed from the construction of massive dams and water supply facilities to networking of existing water supply facilities for efficient use of water, and local water and wastewater services.

Figure 35 The Current Organisational Structure of the Water Industry



8.3.5.2 The Present Institutional Framework

Figure 36 shows the current institutional framework of water and wastewater sector in Korean and the relation between the plans and the acts. The Framework Act on the National Land is the basic law for development and conservation of national land. This act provides a basis of the Comprehensive National Territorial Plan¹⁶¹, the basic national land plan. The plan includes the utilisation and management of land, water, forest and ocean resources, the improvement of the living environment by housing and water and wastewater services, and the prevention of natural disasters. The MLTM executes the act and prepares the plan. According to the plan, the local governments should make local land plans. The NWRP is subordinate to the Comprehensive National Territorial Plan. The NWRP contains the analysis of water demand and supply, the development, provision and management of water resources, and the prevention of flood disaster. Therefore, the NWRP broadly determines water policies such as dam construction, the replacement of old pipes, and the reallocation of water resources. The River Act, the basic law for the designation, utilisation, management and conservation of national rivers, provides the basis of the NWRP. The River Act stipulates articles for the investigation of rivers, the Comprehensive River Basin Improvement Plan, and the River Maintenance Plan. The Long-term Plan for Dam Construction, a subject plan of the NWRP, decides the number, size, and location of dam constructions. The Basic Dam Construction Plan and the Executive Dam Construction Plan, prepared by the implementers of dam construction projects, are practical plans for dam construction.

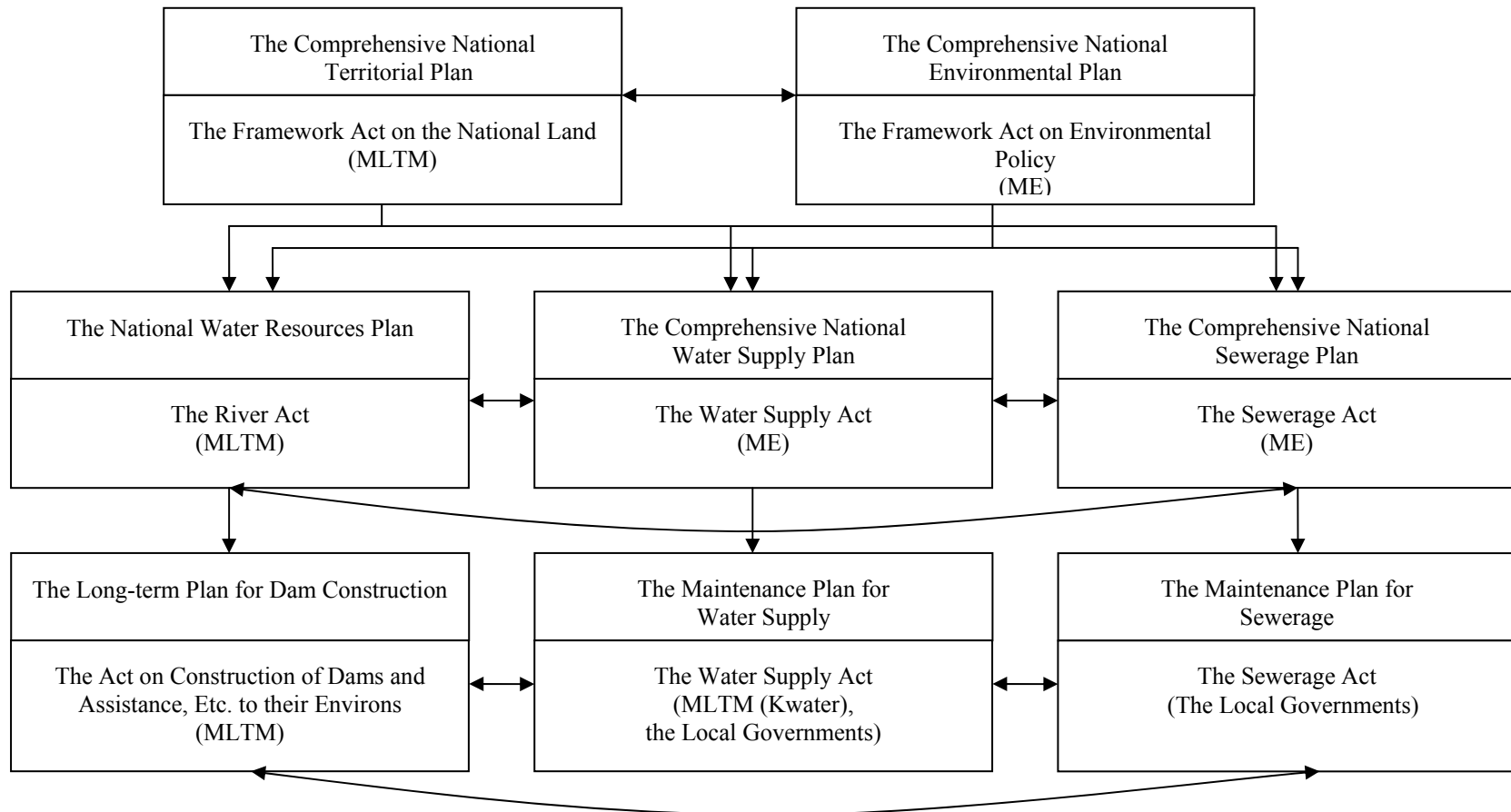
The ME must prepare the Comprehensive National Environmental Plan by the Framework Act on Environmental Policy. The Comprehensive National Environmental Plan, as a basic plan for environmental preservation, comprises the conservation of ocean, land, air and water environment, and the provision of water and wastewater services. The ME and the MLTM should consult each other when they make the Comprehensive National Environmental Plan and the Comprehensive National Territorial Plan respectively by the acts. Therefore, consistency can be achieved between an environment-oriented plan and a supply-oriented plan. Interestingly, both plans include the provision of water and wastewater services even though the Comprehensive National

¹⁶¹ The Comprehensive National Territorial Plan was renamed from the CNTDP in 2000 for the purpose of balancing environment with development.

Water Supply Plan is water supply-oriented while the Comprehensive National Sewerage Plan is water environment-oriented. However, the Comprehensive National Water Supply Plan and the Comprehensive National Sewerage Plan are under the control of the ME, so more directly influenced by the Comprehensive National Environmental Plan. The Comprehensive National Water Supply Plan consists of the developmental plans for multi-regional, industrial, local and village water supply systems, the securing plan for water supply source, and the managerial improvement of the water sector. Based on this plan, the local governments and the MLTM have to prepare the Maintenance Plan for Water Supply every ten years, which determines the arrangement, structure, and capacity of developing water supply systems. The Comprehensive National Sewerage Plan includes the target of sewerage rate, the development and maintenance of sewerage systems, and the establishment of multi-regional sewerage systems. The Sewerage Act places responsibility for preparing the Maintenance Plan for Sewerage on the local governments.

The acts force competent ministries or administrative agencies to consult other related ministries and agencies when they prepare the above plans, in order to keep consistency between the plans. To illustrate, if the MLTM plans to construct a dam to secure water resources and to prevent flooding, the plan affects the Comprehensive National Water Supply Plan and the Comprehensive National Sewerage Plan. The Comprehensive National Water Supply Plan and the Maintenance Plan for Water Supply should refer to the NWRP and the Long-term Plan for Dam Construction in order to decide the location and amount of water intake. In addition, the Comprehensive National Sewerage Plan and the Maintenance Plan for Sewerage might be revised to preserve water quality in a reservoir made by a dam.

Figure 36 The Present Institutional Framework of the Water Industry



8.4 Purposive and Material Actors in the Market-oriented Governance

The above sections historically explained the causal dynamics of events, actors and contexts for the development of the market-oriented governance based on institutional processualism. This processual analysis identified three types of networks: a pro-privatisation network, a pro-corporatisation network and an anti-privatisation network. The pro-privatisation network dominated the privatisation event of the wastewater sector in the late 1990s. It also attempted to introduce the privatisation of the water sector in the early 2000s, but met a severe challenge from the pro-corporatisation network. However, the attention of President Rho Moo-hyun in the water industry strengthened the position of the pro-privatisation network. This network tried to propel the privatisation of the water sector by formulating WIPP. This attempt stimulated the creation of the anti-privatisation network. Due to the veto power of the pro-corporatisation network and the anti-privatisation network, privatisation in the water supply sector has been sluggish. This section pays attention to the incentives that motivated related actors to become involved in these networks.

8.4.1 Material Actors and a Pro-privatisation Network

Ministry of Environment

The ME had taken opportunistic positions according to contextual changes. During the supply-oriented governance under the authoritarian and developmental state, the ministry supported and legitimised the growth-first policy. During the cancellation event of Yeongwol Dam construction, the ME stressed ecological conservation and the geographical dangers of the affected areas by the Yeongwol Dam construction (refer to Subsection 7.5.2.2). The ministry built a close relation with NGOs. However, the ME utilised the IMF crisis as a chance to propel the privatisation of the water and wastewater sector based on the ideology of neo-liberalism. This position was basically development-oriented. Yeom (2007b, p.31), a leading environmentalist, criticised the ME as follows:

The ME, that insists the promotion of the water industry, should rather go to the Ministry of Industry. ... The policy direction of the government (the ME) is to privatise the water industry stage by stage and to provide private companies with full support.

As an interested actor, the main concern of the ME seems to gain the policy hegemony of the water and wastewater sector by defeating competing ministries.

Private Companies

Private companies have benefited from the privatisation of the water and wastewater sector. They became dominant players in the wastewater sector. Though the privatisation of the water supply sector has been slow, this policy led large corporations such as Kolon to engage in the industry. A senior manger from Kolon said:

Last June (in 2006), the ME said about the WIPP. We considered what the water industry is and what our figure is. ... We judged we do many things related with the water industry. ... We decided the water industry can be one of the new growth engines for Kolon.

In fact, through M&A, Kolon established a foothold in the wastewater sector and made a big profit. It bought EFMC for KWR 54billion (GBP 29.6 million) in 1996 and later sold 40 percent of its share for KWR 40billion (GBP 21.9 million) to Standard Chartered Bank in 2009. A senior manager from a competing company against Kolon evaluated Kolon's acquisition of EFMC as "Kolon attained a superior status as a specialised company by buying EFMC and the value of the operation and management know-how of EFMC is uncountable." A few other large companies have showed their interests in the water sector. For instance, the largest gas provider, Samchully, bought a STP operating company, Daeyang Biotech in September 2010 (Lee, 2010). Because the active participation of private companies is also important to the ME for the success of the privatisation policy and WIPP, the ME endeavoured to develop major private water companies. The ME and private companies formed a close network for privatisation.

8.4.2 Material Actors and a Pro-corporatisation Network

Ministry of Public Administration and Security

The privatisation of the water supply sector was a big threat to the MPAS. Thus, the ministry developed a corporatisation policy. A head researcher from Korea Environment Institute, which has a close relationship with the ME, said:

The MPAS is in charge of the organisational policy of the local governments. Because water supply divisions are very large organisations in the local governments, the MPAS mounted stiff resistance to the privatisation. The MPAS proposed public corporatisation. That is to increase the expertise of the public water suppliers. Justification to expertise improvement can not be criticised (by the ME).

The MPAS ordered the corporatisation of metropolitan water supply divisions and the integration of small local water suppliers at a meeting with planning and management directors from metropolitans and provinces (Han et al., 2008, p.14). In order to attract the local governments' interests, the ministry decided to provide diverse incentives including financial subsidies for the local governments and to guarantee job security and Public-Employee Pension for employees when the local governments would corporatise their water supply departments (Koo, 2008). In addition, the MPAS's policy to develop the metropolitan water supply divisions as major public water corporations seemed to be appealing to the metropolitan governments (see Subsection 8.3.3.2).

Large Local Governments

Large local governments interpret the water and wastewater sector as an industry rather than a public service, and therefore tend to be motivated by material interests such as the expansion of business areas. Park, Myung-hyun, the head of the Seoul Water Supply Division, explained the necessity of the corporatisation as follows:

In local regions, water and wastewater services have been contracted out to private companies. In order to prevent the preoccupation of foreign firms, Seoul should enter (the market). ... The chance that the water technology of Seoul can be exported has to be provided (Kim, 2007a, p.4).

The Seoul Metropolitan government was fully supportive of the corporatisation policy and saw this as a way to increase the efficiency of water supply services (see Subsection 8.3.3.2). Seoul has been perceived as a competent water supplier in Korea. A director from Korean Water and Wastewater Works Association and former director of Seoul Water Supply Division said:

Seoul achieved 90 percent of water accounted rate¹⁶² from 50 percent in a very short time. It increased the rate by three to four percent every year. From the perspective of experts, it is a miracle. This is the result led by the expert group in Seoul. They, from managers to technicians, without personnel transfers, have worked for 20 to 30 years. In addition, during the national crisis, the IMF crisis, from the viewpoint of personnel management, employees decreased from 3,600 to 2,600. ... I am sorry to say, but I would like to express that Seoul is more efficient than Kwater.

Most metropolitans established public corporations to operate their STPs. In particular, Gwangju retrieved the operation of its STP from a private company by establishing a public corporation (refer to Subsection 8.3.2.2). Private companies perceive that the tendency of the STP corporatisation is for the organisational expansion of the local governments (see Subsection 8.3.2.4).

Kwater

Kwater, the only public corporation in the Korean water supply sector, prefers corporatisation to privatisation. This is mainly because the policies for corporatisation and contracting-out to specialised water suppliers benefit Kwater as analysed in Subsection 8.3.3.4. In addition, the privatisation of the local water suppliers might be a

¹⁶² Water accounted rate is the ratio of water billed to water produced.

big threat to Kwater. Major utilities such as electricity, telecommunication and gas were privatised or are in the process of privatisation. Therefore, the privatisation of local water suppliers can be easily extended to the privatisation of Kwater.

The pro-corporatisation network has been led by the MPAS, Kwater and large local governments supported by the ministry. To achieve their political and economic interests, the formation of the pro-corporatisation network is an effective way.

8.4.3 A Network and Incentives of Anti-privatisation Actors

Labour Unions

The main role of labour unions is to protect employees' material interests such as job security and wage levels. Both privatisation and corporatisation directly affect the job security of civil servants working in the water sector. As shown in the event of the concession contract of Nonsan, civil servants of the Nonsan water supply department were transferred and became employees of Kwater. This big change in the employment status aroused deep concerns of the labourers. Park, Hyeong-Mo (Labour Today, 2007) the director of the Policy Division at Korean Government Employees' Union argued that "The privatisation of the water sector leads to the degradation of employment (conditions) through job cuts and the increase of temporary workers." He suggested that by establishing specialised water divisions in the local governments and changing human resources management system, the governments could improve management performance. This union not only played the leading role in organising Common Action, but also successfully attracted diverse actors including NGOs and progressive politicians. The union also published several papers and reports¹⁶³, held diverse conferences and organised demonstrations against concession contracts with Kwater.

NGOs

¹⁶³ To illustrate, through a book, named 'Critical Research against the Reorganisation of the Water Supply Business,' this union pointed out the problems of the policies of the ME and the harmful effects of overseas privatisation events.

NGOs perceive water as a basic human right. Maria Lourdes Tabios-Nuera (Yoo, 2006) from Jubilee South, an international NGO, mentioned in a international conference that “Water seems to be only a commodity to private firms, but is life to the poor. The privatisation of water sacrifices universal right human rights, especially the rights of the poor and communities.” Korean NGOs’ ideology does not deviate from her belief. Song (2007, p.22), an environmentalist, argued in a national forum that “Water is a human right. ... The government has a duty to provide clean and safe water as a universal service.”

As analysed in Subsection 8.3.4.3, labour unions, NGOs, several newspapers and experts formed a strong network against privatisation. In particular, Common Action has been at the center of the network. For instance, Common Action organised ‘A National Debate on the Water Industry Promotion Policy and the Public Interest in Water’ in August 2007 in which several National Assemblymen and experts participated. In addition, Common Action held relay-workshops in major provinces, in order to attract the public’s attention.

This section found that, in the market-centred governance, most actors were motivated by material interests except NGOs. The privatisation policies of the ME were congruent with private firms which eagerly tried to take market opportunities in the water sector, but were against the material interests of the MPAS, large local governments and labourers. NGOs tended to be motivated by the belief that water is a human right. Nonetheless, the level of public participation in three layers of decision making might be different. The next section analyses these differences based on the participatory map (see Subsection 2.3.2).

8.5 Participation in the Market-oriented Governance

Strategic decisions may focus on creating the market-oriented policies of the water sector. These include the privatisation policy of the wastewater sector in 1997, policies for the privatisation, corporatisation and stepwise competition of the water supply sector in the early 2000s, and WIPP between 2005 and 2007. Operational decisions are the

local governments' choice for national policies. These embrace the contracting-out of STPs, concession contracts with Kwater and the corporatisation of local wastewater services. Working decisions may include the timing and scope of privatisation, corporatisation and restructuring. In Subsection 8.5.1, the participatory level of strategic decision making is analysed and in Subsection 8.5.2, that of operational and working decision making is investigated.

8.5.1 Policy Formation in the Market-oriented Governance

Policy formation during the period of the market-oriented governance was a battle field among related ministries. Social actors and the local governments were excluded from strategic decision making processes. After a few policy forums, backed by the IMF crisis and some studies on the privatisation of the water sector, the ME introduced the privatisation policy of the wastewater sector (refer to Subsection 8.3.2.1). The ME's controlling power over the financial subsidy that has been ranged from 30 to 80 percent of STP construction costs allowed the ministry to dominate strategic decisions regarding privatisation. Other competing ministries and social actors such as NGOs and labour unions were not very interested in the privatisation of the wastewater sector. Thus, the ME did not face any serious challenges about the policy formulation.

The strategic decision making process of the privatisation of the water supply sector¹⁶⁴ was similar to that of the wastewater privatisation. The ME announced the privatisation of the water supply sector without any consultation. Even the MPAS and the MLTM had no chance to participate in the decision making process. The MPAS's reaction was to suggest the corporatisation of the water providers whereas the MLTM simply disregarded the ME's policy. KEI developed and supported the ME's policies for the privatisation whereas the Korea Local-government Management Institute followed the MPAS's ideas for the corporatisation. There were no places for the local governments

¹⁶⁴ Although the ME's policies for privatisation and the MPAS's policies for corporatisation were partially implemented, this research sees these policies as strategic decisions. This is because these policies are positioned on the highest layer of decision making and had significant impact on the development of the market-centred governance in the Korean water sector.

and social actors in the policy making processes of both ministries. They were nothing but an audience at post policy forums.

WIPP was initiated by President Rho Moo-hyun. The ME defeated the MLTM and led the development of WIPP (refer to Subsection 8.3.4.1). Due to the president's leadership, related ministries passively responded to WIPP. Interest groups were not allowed to participate in the policy making process. Consequently, NGOs and the Korean Government Employees' Union had bitterly resisted the policy by organising Common Action.

Strategic decisions in the market-oriented governance tend to be positioned on non-participation of the participatory map. Interest groups not only had no chance to be involved in the decision making, but also merely "participate by being told what has been decided (Pretty, 1995, p.1252)."

8.5.2 Policy Implementation in the Market-oriented Governance

Though the local governments were not allowed to participate in strategic decision making in the market-oriented governance, material incentives provided by the central governments motivated the local governments to implement the strategic decisions which were already made. Thus, the participatory level of the local government tended to be nothing more than tokenism. Yet, the local governments did not open their operational decision making processes to the public as analysed in the event of the Nonsan concession contract (see Subsection 8.3.3.5). Thus, operational and working decision making in the market-oriented governance was still at the level of non-participation. This tendency is in line with comparative cases: the English and Welsh, Italian and Argentine water sectors. As analysed in Subsections 3.3.3.2, 3.3.3.3 and 3.3.4.1, local governments in the English water sector had no role in the formation of policies and implementation in the water sector, whereas Italian local governments could directly participate in the operational and working level of decisions as members of the assembly of an ATO. In the case of the water sector, local governments were

indirectly involved in the operational and working decision making process via the economic regulator.

In the event of the privatisation of the Korean wastewater sector, most local governments complied with the policy. This was largely because subsidies provided by the ME could fulfil the financial needs of the local governments and political resistance from social actors was not a threat to them. As a result, 46 percent of STPs were operated by private companies as of 2006 and several operating companies came into existence. Yet, the public was outside the decision making processes.

In the event of the privatisation of the water supply sector, the response of the local governments was cold. There were no local governments that let their water supply services be privatised. This was mainly because few subsidies were provided for the water supply sector by the ME and resistance from labour unions and NGOs was substantial. In addition, the local governors tended not to expose the water supply services to the risk of privatisation. Rather some local governments entrusted their water supply services to Kwater because they could easily control this public corporation which is vulnerable to political pressure and not keen on financial profits. Local NGOs and labour unions raised their voices against the concession contracts mainly through demonstrations because they were excluded from all levels of the decision making process. An exceptional case was the event in Jeonju where the city government, NGOs and the labour union organised a joint committee to decide the acceptance or rejection of a concession contract with Kwater (see Subsection 8.3.3.5). However, this was a result of social actors' strong resistance.

WIPP consists of the integration of water suppliers and the promotion of national champions. The first target has been partially successful. The ME provides subsidies for the local governments that participate in the integration. In addition, Kwater has been active to promote the integration of concession-contracted services for increasing operational and managerial efficiency. This benefits the local governments by sharing the efficiency outcomes with the other participants. The second target was heavily criticised by social actors because they perceived this as the first step of privatisation

(see Subsection 8.3.4.3). The main focus of the operational and working decisions was on concession contracts with Kwater. In the same vein with the event of the privatisation of the water supply sector, social actors were excluded. Local governors' political wills and convictions about the economic outcomes of the concession contracts have been key drivers of the reorganisation of the water sector in the market-oriented governance.

This section analysed the level of public participation in three layers of decision making in the market-centred governance. Simply, in strategic decision making, there were no opportunities for the public to participate. Local political leaders including mayors played a key role for operational and working decisions because water and wastewater services are under the control of the local governments. Yet, they were reluctant to open the decisions to the public. They rather tried to suppress or disregard the collective actions of labour unions. To illustrate, the governor of Goseong-gun accused its union leaders of an illegal demonstration, although it was peaceful. In most cases, social actors raised their voices through demonstrations, press interviews and forums, which were organised by labour unions and/or NGOs. Though the central and local governments did not utilise authoritarian measures unlike the strong and developmental states in the supply-oriented governance, public participation in the three layers of decisions was still in the level of non-participation.

8.6 Concluding Remarks

The present governance structure of the Korean water sector is an outcome of previous and contemporary events and episodes, which mainly resulted from the intense interaction between actors responding to contexts. This chapter focused on the extent to which the market-centred prescriptions have impacted on the evolution of the Korean water industry through the change of decision making centres. In the Korean water industry policy arena, an elite cannot dominate decision making power, but several actors compete to gain more power. To overcome the limitation of power, the main actors like the ME and the MPAS tend to form networks with other actors. Most actors involving privatisation and/or liberalisation have been driven by self-interest, while

NGOs have been motivated by ideology. In particular, Korean ministries such as the ME and the MPAS compete with each other to gain policy initiatives which are directly and indirectly related to organisational growth and influences.

When the ME pronounced the privatisation of the water supply sector, the objection of other actors including the MPAS was more noticeable. The MPAS activated its resources based on which it researched and announced the corporatisation policy of the water supply sector. Naturally, a pro-corporatisation network was formed in which large local governments, a research institution and some experts participated. In this context, step-wise competition policy was suggested by several academics, and several forums mostly organised by academic associations, followed. This stimulated policy learning about the restructuring policy of the Korean water industry. To both networks, the step-wise competition policy was attractive because in the short and medium term, the policy suggested a corporatisation and it aimed at privatisation in the long term. In addition, both networks recognised that coercive policies could not be implemented. Consequently, step-wise competition policy was generally agreed even though there was some discrepancy between networks according to their basic preferences. In this context, the ME revised the Water Act to allow private participation in 2001 and reflected the step-wise competition idea in the Comprehensive National Water Supply Plan in 2006. This policy change favours Kwater. It made 18 concession contracts. Yet, several concession contracts could not be made due to objection of labour unions and NGOs.

President Roh Moo-hyun's order about the water industry development was a critical event which considerably changed resources of actors. The ME officially took charge of the water industry policy and was allowed to establish a new division, the Water Industry Promotion Division. The ME established and announced the WIPP which facilitated a large business to take an interest in the water business. On the other hand, this event promoted Korean Government Employees' Union to form the anti-privatisation network, and environmental and economic NGOs actively participate in the network. The pro-privatisation network and the anti-privatisation network held

forums to publicise their ideas and some newspapers and experts started supporting one of networks based on their preferences and beliefs. Due to the domination of the ME over the MPAS and the ME's open policy about the corporatisation of large cities, the pro-corporatisation network diminished. Yet, there is no case of concession contracts by private companies in the water supply sector. This is partly because of the resistance of the anti-privatisation network and the reluctance of governors toward privatisation. That is, the anti-privatisation network has gained considerable influence in the decision making of concession contracts. However, its power was not granted by the law or the government, but accumulated by the political force raised by its big voice.

Social actors and the public were excluded from all strategic decision making processes. The related ministries developed the industrial policies of the water sector according to their preferences and interests, and formed supporting networks to realise their policies. Even the local governments were in a position of 'tokenism' concerning 'strategic decisions' on the participatory map. The local governments decided whether they would participate in the industrial policies by calculating material incentives provided by the central government. Operational and working decisions were not open to the public. The local governments implemented the contracting-out of the STPs and made concession contracts of the water supply services with Kwater in a secretive manner. Thus, the operational and working decisions were in the state of non-participation. Social actors such as labour unions and NGOs raised their powerful voices outside the formal decision making processes. Nonetheless, due to the growth of civic power in the environment-oriented governance, their objections were effective in stopping some concession contracts with Kwater including Jeonju and Namwon events.

Until now, this research qualitatively analysed the changing process of the Korean water sector governance based on SDT by utilising a process analysis, institutional processualism. The previous chapters tried to causally explain how and why a certain governance structure was formed. The decision making structure of the Korean water industry has devolved from a strongly centralised structure to less centralised ones. However, this does not mean that the (narrow) economic efficiency of the industry has

been improved. The efficiency could have improved or worsened. The next chapter analyses the trend of efficiency and attempts to find the reasons of the efficiency change.

Chapter 9 An Efficiency Analysis

9.1 Introduction

This research is mainly a piece of qualitative research utilising a type of processual analysis, namely institutional processualism. The processual analysis allows this research to historically generalise the proposition of SDT in the Korean water sector and to extend the analytical stance from a static state to a dynamic process. The development of participation has been a result of severe interaction between actors, events and context. As analysed, the governing structure of the Korean water sector has evolved from highly centralised supply-oriented governance, through more decentralised environment-oriented governance, to moderately centralised market-oriented governance. Nonetheless, the changing governance of the water sector is not always accompanied by an increase in industrial efficiency, meaning the process of spending less to achieve the same outputs. Many have argued that the efficiency of the Korean water sector is in a low state or has decreased. To illustrate, low efficiency has been recognised as a main problem of the industry by several commentators, such as Moon et al. (2001, p.18) and Baek et al. (2001, pp.35-36). Furthermore, Kwon and Hong (2006, p.79) quantitatively reported the decreasing efficiency of the Korean water supply sector. The main arguments for increasing the efficiency of the Korean water sector have been more market and/or more scale founded on the neo-liberal ideas without thorough analyses on the reasons of increasing inefficiency (Park and Choi, 1999, pp.146-178, Moon et al., 2001, pp.68-74/100-114, ME, 2006c, pp.52-54).

Yet, this research sees the issue of efficiency differently as being based on SDT. Beyond simple efficiency, from the perspective of SDT, to be competitive means to effectively achieve democratically chosen objectives of an industry and/or an economy (Branston et al., 2006c, p.309). Given that it is likely that efficiency would form part of any democratically chosen objectives and that efficiency could be argued to form part of effectively achieving any desired objective, efficiency is an important matter. As one of the research aims is to suggest good governance for the Korean water sector, which is

defined as democratic governance with competitiveness, industrial efficiency seems to be highly relevant to this research. This chapter intends to investigate the sources of efficiency, to test the market-oriented arguments and to draw critical issues for good governance. This complementary analytical strategy which employs a qualitative methodology may facilitate the understanding of the changing governance of the Korean water sector as mentioned in Subsection 4.3.3.1.

The next section reviews previous efficiency analyses on the international and Korean water sector based on which functional forms and relevant variables are discussed. In Subsection 9.3.1, a Cobb-Douglas production frontier model is selected following a classic model of stochastic frontier analysis developed by Battese and Coelli (1995), who are one of the forerunners of efficiency analysis and developed a SFA software. Subsection 9.3.2 presents empirical results and deliberates on the applicability and covets of this model. Section 9.4 concludes this chapter by discussing the market-oriented arguments and governance-related issues based on the empirical results.

9.2 Previous Efficiency Analyses and Analytical Issues

9.2.1 Efficiency Studies on the Korean Water Sector

Not many studies have been conducted that measure the efficiency of the Korean water sector, although some work has taken place, many of which utilise different econometric approaches. Yoo Keum-rok (2001, 2002, 2004) analysed the efficiency of the local water supply authorities and the operators of STPs by Data Envelopment Analysis (DEA) and Stochastic Frontier Analysis (SFA) respectively. Yoo (2002) employed DEA and Malmquist output index and examined panel data from 89 local water suppliers between 1997 and 2000. The number of employees and net operating assets were chosen as input factors, and the length of mains, the number of connections and water delivered were selected as output factors. This study reported that total factor productivity increased by 5.9% on average while technical efficiency decreased by 0.02% on average during the period. He explained that technical change resulting from

innovation filled the gap of technical inefficiency (refer to Subsection 4.3.3.2). Yoo (2001b) used a cost frontier and a translog function to analyse the efficiency of 17 operators of STPs. Panel data from 1994 to 1998 was examined. This analysis selected operating costs (labour costs and material costs) as an input and wastewater treated per day, equity ratio (shareholder equity/total assets) and total sales-costs ratio (total sales/total costs) as the three outputs. He reported an increase in the efficiency of the operators from 0.716 in 1994 to 0.947 in 1998. Unexpectedly, however, six metropolitans were less efficient than eleven cities of medium scales in his analysis.

Won Koo-hwan (1998) compared the efficiency of 83 local water supply authorities from 1993 to 1996 by SFA. A Cobb-Douglas production function and a stochastic production frontier were utilised. Input variables, included all cost accounts on the income statements excluding depreciation, while the output variable was sales/costs ratio¹⁶⁵. The analysis did not consider the effects of investments. The analysis reported that maintenance costs and general administrative expenses positively contributed to the sales/costs ratio while chemical costs and interest negatively impacted on it. By specifying the inefficiency variable, the study informed that efficiency decreased with the passage of time and the increase of employees. Yoon Kyung-jun and Won Ku-hwan (1996) utilised DEA to analyse the 1994 cross-sectional data of 67 local water authorities. Labour costs, material expenses including energy and maintenance costs, other operating costs and non-operating costs were chosen as input variables while water delivered per person per day, debt ratio and sales/costs ratios were selected as output variables. The analysis could not inform the efficiency change of the water suppliers because it employed cross-sectional data, but reported 16 efficient firms which were on the frontier and calculated the relative efficiency of other suppliers against the efficient suppliers.

Kwon and Hong (2006) adopted a translog input distance function for SFA (refer to Coelli et al. 2005, pp.111-112/264-265). They used the rates of water delivered and water accounted as output variables, and construction costs and operating costs as input

¹⁶⁵ Sales/costs ratio is calculated by (total sales/total costs x 100).

variables. Five years of panel data from 2000 to 2004 were analysed. The study reported the decreasing efficiency with the passage of time and the increasing scale economies of most water suppliers. Kim Ui-jun (1997c) adopted a translog cost function (refer to Coelli et al., 2005, p.267) to analyse the efficiency of 90 Korean water suppliers with six years of panel data between 1989 and 1995. Input variables used by the model were labour costs, capital costs and material costs. The output variable was water produced. Cost functions mostly need the price information of input factors. Wages were estimated by total labour costs divided by total employees. The capital costs in his research were composed of depreciation, interests and equity capital costs. The unit capital cost was calculated by dividing the total capital costs by the water produced. The unit material cost was estimated by dividing the total material costs by the water produced. He suggested that most water suppliers exist too small a scale to experience, so the integration of water suppliers and/or service areas increases the efficiency of water supply services.

Park Sang-in (2005d) applied a Leontief production function to analyse the scale economies of 167 local water authorities with 2001 Water Supply Statistics. He chose the number of labourers as the dependent variable and selected the length of mains, the number of households, water delivered per day, the rate of multi-regional sanitised water and the rate of multi-regional raw water, the distance from water source to distribution network, and the rate of water accounted as explanatory variables. His choice of variables was based on the assumption that the scale economies of the Korean water sector occur from labour costs. He (2005e) applied the same model and statistics to Nonsan-gun and Kongju-gun having 74,404 and 81,907 water consumers respectively, to analyse the integration effect of the two water supply systems. He reported that the integration reduces the number of employees by 28 people and saves around 6.3 to 7.4% of the average production costs.

9.2.2 International Studies about the Efficiency of Water Industries

Comparing the efficiency differences among countries and between private water companies and public water service providers has been a critical, analytical issue among

western academics and practitioners. To illustrate, OFWAT (2002, 2004, 2005b, 2006), the regulator for the English and Welsh water industry, periodically compares the efficiency of the English and Welsh water sector with those of other countries by using relatively simple descriptive statistical methods. Saal and Parker (2000) assessed the influence of the privatisation on the English and Welsh water industry with a cost frontier function. They used panel data from 1985 to 1990. They employed multiple output variables: water supply output and sewerage output and a single input variable: the total costs consisting of capital, labour, materials and fuel, and contracted services expenses. Capital rate, wage rate and a composite price index for materials represented the factor prices of capital, labour and other inputs. The focus of the analysis was on the efficiency change of the English and Welsh water industry resulting from the privatisation of the industry. They argued that privatisation itself did not accompany a statistically significant reduction in the growth rate of total costs, but the strict price review of 1994/1995 brought about the decline of the growth rate of costs. Saal, Parker and Weyman-Jones (2007) extended the analytical perspective by employing more data from 1985 to 2000 and accommodating water quality measures. They utilised a translog input distance function and estimated the function with SFA. As output variables, quality adjusted connections with water customers, quality adjusted connections with sewerage customers, physical water supply, and physical sewerage treatment load were chosen. As input variables, estimated capital stock, current operating costs, and full time equivalent employee numbers were selected. They similarly concluded that productivity did not significantly increase after privatisation and that the productivity growth rates during the period from 1995 to 2000 were lower than those before privatisation.

Bhattacharyya et al. (1995) estimated the efficiency of 221 American water suppliers consisting of 190 public firms and 31 private firms by a stochastic cost frontier model based on a translog cost function. They used a 1992 survey of the water utilities serving a population of more than 25,000 people which was conducted by the American Water Works Association. As output variables, total quantity of water produced and total system losses were considered, and as input factors, energy, labour and materials were included. They reported that the average cost efficiency of the private firms was higher than that of the public firms. However, in the case of larger firms producing more than

ten billion gallons per year, the public firms were much more efficient than the private firms, whereas private firms producing between five and ten billion gallons per year were less inefficient than the public firms.

The World Bank published several working papers concerning the international efficiency comparison of water industries. Estache and Rossi (1999) evaluated the efficiency of 50 firms in the Asia and Pacific region with a stochastic cost frontier analysis (see Subsection 4.3.3.3). They employed a Cobb-Douglas cost function and used the 1995 cross-sectional data surveyed by the Asian Development Bank. Their explanatory variables were salary, the number of clients, population density in the area served, the number of connections, market structure represented by the residential sales and total sales, the number of hours of water availability, and a concession dummy. The dependant variable was operating and maintenance costs. They reported that the private firms were more efficient than the public suppliers. Estache and Kouassi (2002) utilised a production frontier and a Cobb-Douglas production function to estimate the production efficiency of 21 African water utilities. The dependent variable was the real output of the utilities. The explanatory variables were capital stock, materials, the hours of work, the energy costs and the number of connections. To evaluate the source of inefficiency, the inefficiency term was specified by corruption and governance. Only 12.9% of the water utilities efficiently operated compared to other utilities. Corruption negatively influenced efficiency while governance enhanced efficiency.

9.2.3 Main Issues in Efficiency Analyses

9.2.3.1 The Selection of Input and Output Factors

Selecting the output and input variables which represent the characteristics of the production technology of the Korean water sector is critical to analysing efficiency appropriately. As shown in Table 28, major input factors can be classified into capital stock or costs, expenses in income statements including operating and non-operating costs and the number of employees. Due to the inflexibility of capital stock in the water sector, some (Park, 2005d, Park, 2005e) argue that economies of scale mostly occur in

the reduction of labourers. But many other analysts (Park, 2005e, Park, 2005d, Saal et al., 2007, Estache and Kouassi, 2002, Kim, 1997c, Yoo, 2002) have considered the physical input of labour as an independent factor. However, the number of employees and/or the cost of labour can vary according to the level of capital investment. Therefore, many researchers have included capital factors such as capital stock (Estache and Kouassi, 2002, Saal et al., 2007, Yoo, 2002) and capital costs (Saal and Parker, 2000, Kim, 1997c) in input factors.

Some analyses (Yoo, 2001b, Won, 1998, Yoon and Won, 1996) included only operating and non-operating costs as input factors mostly based on the argument that investment in the Korean water sector is an uncontrollable factor because the investment has mainly come from the local or central governments as diverse forms of subsidies. However, the level of both investment and government subsidies significantly differs between water suppliers, and the level of investment significantly influences the level of operating costs. To illustrate, the ME (1999c, p. I -148) shows that the larger production scale of WTPs significantly reduced the number of operators. In addition, some models included the number of employees and labour costs as input factors. This is highly likely to cause a multicollinearity problem. Based on this perception, this research considers capital stock and operating costs as input factors.

Output factors are mostly related to physical outputs such as water produced, water delivered, water accounted and wastewater loads. Some Korean researchers (Yoo, 2001b, Won, 1998, Yoon and Won, 1996) have considered financial indicators including equity ratio, debt ratio and sales-cost ratio. Some scholars (Saal et al., 2007) have included water quality indicators, such as the number of water standards broken. Financial indicators as output factors are not appropriate for the Korean water industry because most local governments controlling and managing local water authorities tend to keep water tariffs under production costs, and instead subsidise construction expenses and even operating costs. The inclusion of qualitative measures in the output factors is a good idea in that the increase of water quality might require huge investment.

Table 28 Previous Research about Efficiency Analysis

Researchers	Input Factor(s)	Output Factor(s)	Methods
Yoo Keum-rok (2002)	<ul style="list-style-type: none"> - Number of employees - Operating capital (total capital stock – accumulated depreciation) 	<ul style="list-style-type: none"> - Length of mains - Number of connections - Water delivered 	<ul style="list-style-type: none"> - DEA - Malmquist index
Yoo Keum-rok (2001)	<ul style="list-style-type: none"> - Operating costs (labour costs + material costs) 	<ul style="list-style-type: none"> - Wastewater treated per day - Equity ratio (equity/total assets) - Sales-costs ratio (total sales/total costs) 	<ul style="list-style-type: none"> - SFA - Trans-log cost function
Won Koo-hwan (1998)	<ul style="list-style-type: none"> - All costs in Income statements (labour, chemicals, energy and interest) 	<ul style="list-style-type: none"> - Sales-costs ratio 	<ul style="list-style-type: none"> - SFA - Cobb-Douglas production function
Yoon and Won (1996)	<ul style="list-style-type: none"> - Labour, Material, and Other operating costs - Non-operating costs 	<ul style="list-style-type: none"> - Water delivered per person per day - Debt ratio, Sales-costs ratio 	<ul style="list-style-type: none"> - DEA
Kwon and Hong (2006)	<ul style="list-style-type: none"> - Construction costs - Operating costs excluding interests and depreciation 	<ul style="list-style-type: none"> - Water delivered - Water accounted rate 	<ul style="list-style-type: none"> - SFA - Translog input distance Function
Kim Ui-jun (1997)	<ul style="list-style-type: none"> - Labour costs, capital costs, material costs - Number of employees 	<ul style="list-style-type: none"> - Water produced 	<ul style="list-style-type: none"> - Translog cost function
Park Sang-in (2005a, 2005b)	<ul style="list-style-type: none"> - Length of mains, Number of households, Water delivered - Dependence on multi-regional water, distance from water source, rate of water accounted 	<ul style="list-style-type: none"> - Number of employees 	<ul style="list-style-type: none"> - LS (Least Squares) - Leontief production function

Saal and Parker (2000)	- Total costs (capital, labour, materials and fuels, and contracted services)	- Physical water supply - Physical sewage treatment	- SFA - Translog cost function
Saal et al (2007)	- Capital stock, operating costs, number of employees	- Quality adjusted water and sewerage connections - Physical water supply and wastewater treatment load	- SFA - Translog input distance function
Bhattacharyya et al. (1995)	- Energy costs, labour costs, and material costs	- Total quantity of water produced - Total system loss of water	- SFA - Translog cost function
Estache and Rossi (1999)	- Operating and maintenance costs - Density of population - Concession dummy	- Number of client - Number of connections - Number of hours of water availability	- SFA - Cobb-Douglas cost function
Estache and Kouassi (2002)	- Capital stock - Materials and energy costs - The hour of work - Number of connections	- Real output of utilities	- SFA - Cobb-Douglas production function

However, the Korean water sector does not provide enough information to measure quality issues such as the number of water quality standards that were broken. Therefore, this research focuses on physical outputs.

9.2.3.2 The Selection of Functional Forms

SFA can utilise four types of frontier functions: cost frontier functions, production frontier functions, input distance frontier functions and output distance frontier functions. The characteristics of the functions are explained in Section 4.3.3 of the methodology chapter in detail. In the water sector, outputs might be exogenous. Water suppliers can not determine water demand and most governments have policies for reducing water consumption in place. To meet the exogenously given water demand, water suppliers might try to reduce their production costs. Thus, the assumption of input distance functions and cost frontier functions is more appropriate to the water sector than that of output distance functions and production frontier functions. Nonetheless, a stochastic production frontier is selected for this research rather than a cost frontier or an input frontier.

The justifications of the selection of a stochastic production frontier are as follows. Production frontiers better meet the principle of parsimony of functional form than other frontiers due to their simple functional forms (Coelli et al., 2005, p.212). Furthermore, cost frontiers require the factor prices of inputs, which are not available from the dataset published by the Korean government. The factor prices can be estimated, for example, by dividing the total labour cost in a certain year by the total number of employees in that year. It is, however, unclear whether the estimated factor prices reflect real market values. In cases when factor prices are not available and multiple inputs and outputs are considered, input distance functions are appropriate to analyse technological characteristics (Coelli et al., 2005, p.264). Nonetheless, despite the flexibility of input distance functions, distance functional forms may possibly cause the correlation of explanatory variables and error terms and often can fail to meet the property of concavity and quasi-concavity (Coelli et al., 2005, p.264). This can lead to problematic estimations. In practice, water-accounted rates in the Korean water sector have been relatively low, which were 70.8% of the total water produced in 1996 and

79.3% in 2005. In most cases, when water-accounted rates¹⁶⁶ were measured for concession contracts, the measured data was significantly lower than the statistical ones. In addition, the expansion of water supply services to rural areas is still an important issue. These conditions support the choice of a stochastic production frontier. Moreover, many analysts (Estache and Kouassi, 2002, Won, 1998) have used stochastic production frontiers for the efficiency analyses of the water supply sector.

SFA needs to specify a production or cost function to estimate parameters. Cobb-Douglas production (or cost) functions or translog production (or cost) functions are often used for SFA. Cobb-Douglas functions assume the constant effect of technical change, whereas translog functions allow the increase or decrease of the technical change effects with time (Coelli et al., 2005, p.213). Thus, translog functions are more flexible than Cobb-Douglas functions. However, translog functions should estimate more parameters than Cobb-Douglas functions. This increases econometric difficulties and makes, in many cases, translog functions consider the small number of input and/or output factors. For this reason, this research postulates that technical changes in the Korean water sector have constant effects on the increase or decrease of outputs. Based on this assumption, Cobb-Douglas functional forms have been frequently used to examine the efficiency of the water sector (Won, 1998, Estache and Rossi, 1999, Estache and Kouassi, 2002). Therefore, this research employs a stochastic production frontier model suggested by Battese and Coelli (1995).

9.3 A Stochastic Frontier Analysis

9.3.1 A Cobb-Douglas Production Frontier Model

In order to avoid debates about the selection of a functional form and analytical strategy, this analysis selects a standard model of Battese and Coelli (1995) and follows their analytical strategies. The conventional SFA model (Equation (4.4) in Chapter Three) can be rewritten for panel data:

$$\ln q_{it} = \beta_0 + \beta_1 \ln x_{it} + v_{it} - u_{it} \quad (9.1)$$

¹⁶⁶ Water-accounted rate means water-billed rate. This can be calculated by deducting water-leaked and water unbilled for public use from water produced.

where q_{it} represents the production for i -th firm ($i=1,2,3,\dots,N$) at the t -th observation ($t=1,2,3,\dots,T$); x_{it} is a vector of inputs of the i -th firm at t -th observation; β_1 is a vector of unknown parameters; v_{it} s are statistical noise which are random variables, independently distributed of u_{it} s; and u_{it} s are technical inefficiency of production which are non-negative random variables having a truncated normal distribution at zero. Battese and Coelli (1995, pp.325-328) attempted to specify the inefficiency of variables u_{it} s by adding an equation:

$$u_{it} = z_{it}\delta + w_{it} \quad (9.2)$$

where z_{it} is a vector of explanatory variables related with technical inefficiency of production; δ is a vector of unknown coefficients; and w_{it} is the random variable. u_{it} , truncated at zero, is the normal distribution with mean, $z_{it}\delta$ and variance, σ^2 . Corresponding to the positive condition of u_{it} , w_{it} is obtained by the truncation of normal distribution with zero mean and variation σ^2 at $-z_{it}\delta$. Therefore, w_{it} is more than or equal to $-z_{it}\delta$.

9.3.2 Input and Output Data

The analytical focus of this model is on the Korean water supply sector excluding the Korean sewerage sector because the sewerage sector does not collect and provide comprehensive input and output data¹⁶⁷. The analysis chooses a single output factor: water accounted (y_{it}). The water accounted can be calculated by deducting water leaked, water mis-metered, water consumed by the water suppliers themselves, water used for the public without payment and water taken illegally from water produced at water treatment plants. The reason why water accounted is chosen rather than water produced is that it can indirectly measure suppliers' effort to reduce water leakages. Reductions in

¹⁶⁷ The Korean sewerage sector has a fragmented service structure where around 50% of STPs are operated by private and public corporations and BTL (Build, Transfer and Lease) was introduced in sewer networks while the local governments are still major operators of sewerage facilities. More importantly, the government does not collect and publish any comprehensive input or output data of the Korean sewerage sectors.

leakages are one of their main targets in that it increases the efficiency and effectiveness of the water supply, preserves the water environment by saving water resources and reducing wastewater, and prevents secondary water contamination caused by old mains¹⁶⁸.

This analysis chooses net operating assets ($Assets_{it}$), labour costs ($Labour_{it}$), electricity costs ($Energy_{it}$), water purchased from the multi-regional water supplier, Kwater ($Water\ bought_{it}$), maintenance costs ($Maintenance_{it}$) and other operating costs ($Other\ costs_{it}$) as inputs. Total operating assets ($Assets_{it}$) includes operating assets, investment by consumers and third parties, subsidies from the government and revaluation reserve, but exclude construction in-progress. Net operating assets ($Assets_{it}$) might have a positive, relatively large coefficient because of the capital intensive characteristics of the water industry. This model excludes the number of labourers and depreciation costs to avoid the multicollinearity problems with labour costs ($Labour_{it}$) and net operating assets ($Assets_{it}$) respectively. The coefficients of both input variables are expected to be positive. The analysis in Saal et al. (2007, p.134) on the England and Wales water industry shows the positive coefficient signs of capital stock, employee numbers and operating costs and the capital intensive characteristics of the industry. Water bought from Kwater has been a controversial issue among researchers and practitioners. Moon (2003, p.11) argues that the water provision by Kwater is a sort of subsidy to the local water authorities because the central government invested in multiregional water supply systems. However, some have argued that the significant increase of multiregional water prices became a burden to the local water authorities. This research expects the positive coefficient of *Water bought* variable according to the second argument. Maintenance costs and other costs including chemicals and materials are important cost factors. Thus those are included in the model. This research anticipates a positive relationship between *Maintenance costs* and *Other costs* variables and physical outcomes. By accommodating several input variables, this Cobb-Douglas production model can examine the more specific relation between diverse input factors and the output factor. By assuming Cobb-Douglas production function, Battese and Coelli's (1995) model can be rewritten as below:

¹⁶⁸ Water leakage is a major cause of water loss and mainly results from old mains pipes. Thus, water leakage reduction projects generally focus on the replacement of old mains. This also reduces water contamination within the old mains which is a main source of drinking water pollution.

$$\ln y_{it} = \beta_0 + \beta_1 \ln(Assets_{it}) + \beta_2 \ln(Labour_{it}) + \beta_3 \ln(Energy_{it}) + \beta_4 \ln(Waterbought_{it}) + \beta_5 \ln(Maintenance_{it}) + \beta_6 \ln(OtherCosts_{it}) + v_{it} - u_{it} \quad (9.3)$$

The technical inefficiency effects are assumed to be defined by:

$$u_{it} = \delta_0 + \delta_1 \ln(People_{it}) + \delta_2 \ln(Employees_{it}) + \delta_3 \ln(Main\ length_{it}) + \delta_4 \ln(Year_{it}) + w_{it} \quad (9.4)$$

where $People_{it}$ is the number of supplied people; $Employees_{it}$ indicates the number of employees, $Main\ length_{it}$ is the length of transmission, distribution and supply mains; and $Year_{it}$ indicates the year the observations were made. Many argue that the number of customers influences the efficiency of the water suppliers, so this model attempts to analyse the degree to which a large number of customers contributes to the decrease of the inefficiency of the suppliers. The number of employees is a key issue regarding the efficiency analysis on the water sector as stated the former section. This model considers the positive effects of employee numbers on inefficiency. Main length indirectly indicates the density of economies. Mostly, in rural areas, more mains might be needed to supply water to a unit customer. This model expects a positive relationship of the length of mains with inefficiency.

This analysis uses ten years of datasets between 1996 and 2005 collected from the Financial Statements and Analysis of Local Public Corporations (1996-2005) of the MPAS and the Water Supply Statistics (1996-2005) of the ME. The reason why ten years of data is employed is because the local governments experienced unification and/or the change of districts in 1995 when local autonomy was introduced. This analysis selects 94 local water authorities using an independent accounting system from their local governments out of 167 local water authorities. The MPAS has recommended an independent accounting system for local water suppliers having more than water production capacity of 15,000m³ per day. As of 2005, an independent accounting system has been employed by 106 local water authorities, of which 12 water authorities are excluded from this analysis. This is because they adopted the accounting system in recent years, so their accounting data is not sufficient to keep comparability with other water authorities. GNP deflator is used to convert financial data expressed

with money from nominal values to real values. Frontier 4.1 software developed by Coelli (1996) is used to estimate the model.

9.3.3 Empirical Results

As shown in Table 29, the log-likelihood ratio (LR) is 377, which is significantly higher than the critical value of $\chi^2_7=18.4753$ at the significant level of 0.01. All explanatory variables are statistically meaningful at the significant level of 0.01.

Assets_{it} is positive, but relatively small (coefficient score of 0.081). This seems to violate the assumption of capital intensive characteristics of the water sector. As of 1996, the water supply rate of Korea already reached 83.62% of total population and increased to 90.67% in 2005 by growing 7.05%. In terms of the quantity of water, water delivered increased by 600 million m³ per year from 3,967 to 4,568. However, total operating assets decreased by KRW 208 billion (GBP 110.6 million at the rate of December 2000) from 8,003 to 7,795 in 2000 real prices adjusted by GDP deflators. This seems to be highly impacted by the fact that Seoul reduced its total operating assets by KRW 937 billion (GBP 498 million) from 2,621 to 1,684. As Table 30 shows, in large suppliers serving more than one million people excluding Seoul¹⁶⁹ and upper-mid suppliers serving between 500,000 and 999,999 customers, the influence of *Assets_{it}* on water accounted is considerable, which are 0.2697 (t-ratio 5.33) and 0.2158 (t-ratio 4.47) respectively. However, the impact of lower-mid suppliers serving 100,000 to 499,999 people is positive, but marginal despite statistical insignificance. The influence of small suppliers serving fewer than 100,000 persons is also limited. This is highly likely to be caused by huge social and environmental investments in lower-mid and small suppliers, but the marginal increase of their consumption due to their less dense and small scale of population. Furthermore, the mixed trend of closing old facilities and constructing new systems might result in only marginal effect to the assets.

Labour costs show an interesting relation with the water accounted, which is significant and relatively strong both in the whole suppliers and in each group. Labour costs

¹⁶⁹ Seoul is excluded from the group of large suppliers because Seoul has a different pattern from other large cities. Due to its large scale, which shared 43.1% of the population of the eight largest cities as of 2005, Seoul might pervert the pattern of parameters. As a result, when Seoul is included in the group, the coefficients are not statistically meaningful.

increased by 64% from 275 to KRW 452 billion (GBP 240 million). In contrast, the number of employees decreased by 23% from 16,752 to 12,826 people. That is, the labour costs considerably rose not because of an increase in employees, but because of the rise in wages.

The negative elasticity of energy costs was not expected even if the degree of influence was low (-0.0451). This was mainly because the large supplier group in Table 30 negatively influences on the dependant variable with statistic significance by showing the coefficient of -0.2954 (t-ratio -4.79). The decreasing patterns¹⁷⁰ of Busan, the second largest city, and Incheon, which occupied 57.9% of the total energy costs of the large supplier group (KRW 43 billion in 2000 real prices, GBP 23 million) as of 2005, might have a big impact. In addition, though its influence was less significant, lower-mid suppliers also contributed to an adverse relationship between the energy costs and the water accounted. For a clearer understanding of the reasons, further in-depth research is required which falls outside the scope of this thesis.

As expected, *Water bought_{it}* has statistically significant and positive effects. *Maintenance costs_{it}* is statistically significant and contributes a fair amount to the increase of the outputs as a whole. Yet, the upper-mid suppliers have a relatively substantial adverse influence on significant statistics (the coefficient of -0.0761 with t-ratio -3.60). According to data exploration about the water accounted (y_{it}) and *Maintenance costs_{it}*, of the group, Jeonju and Anyang tend to cause the negative relation between the variables. Yet, in order to explain the negative relationship, an in-depth study is required. *Other Costs_{it}* is composed of chemicals, research and development, and other operating costs. As direct costs, it seems to be proportionate with the output factor as shown in Table 29 and Table 30.

A strong point of SFA is that it can separate statistical noise from inefficiency effect as illustrated in Subsection 4.3.3.3. According to Battese and Coelli's suggestion (1995), this analysis specifies an inefficiency model with a stochastic production frontier function. The models were calculated with Frontier 4.1 software and 'A Guide to

¹⁷⁰ The energy costs of Busan decreased from 22 (GBP 11.6 million) in 1996 to KRW 16 billion (GBP 8.7 million) in 2000, whereas that of Incheon decreased from 9.3 (GBP 4.9 million) to KRW 8.7 billion (GBP 4.6 million).

Frontier Version 4.1' (Coelli, 1996) was consulted. In the inefficiency model, all explanatory variables are statistically significant at a level of 0.01 as shown in Table 29. Contrary to the general perception, the scale of people has a marginal effect on efficiency growth although they are positively correlated. The increase of employees negatively impacts on efficiency, but its influence is small. Unexpectedly, in the upper-mid group, the increase of employees rather results in the improvement of efficiency. In contrast, the inefficiency of the water suppliers has increased a fair amount with the length of main and has been fairly affected by the passage of time.

Table 29 Results of the Cobb-Douglas production model

Estimated Cobb-Douglas production function parameters				
Dependent variable: Water accounted				
	Parameter	Coefficient	Standard error	t-ratio
Constant	B_0	-3.0195	0.2667	-11.32
$\ln(Assets_{it})$	B_1	0.0806	0.0171	4.47
$\ln(Labour_{it})$	B_2	0.4641	0.0392	11.84
$\ln(Energy_{it})$	B_3	-0.0451	0.0100	-4.50
$\ln(Water\ bought_{it})$	B_4	0.0281	0.0028	10.09
$\ln(Maintenance_{it})$	B_5	0.1079	0.0185	5.84
$\ln(Other\ Cost_{it})$	B_6	0.3187	0.0269	11.83
Estimated Technical inefficiency parameters				
	Parameter	Coefficient	Standard error	t-ratio
Constant	δ_0	0.5209	0.0678	7.68
$\ln(People_{it})$	δ_1	-0.000001	0.0000	-18.09
$\ln(Employee_{it})$	δ_2	0.0026	0.0002	13.75
$\ln(Main\ length_{it})$	δ_3	0.0787	0.0070	11.24
$\ln(Year_{it})$	δ_4	0.0250	0.0055	4.52
Diagnostics				
Sigma Squared		0.1506	0.0080	18.87
Gamma		0.5017	0.0282	17.81
Log likelihood function	-407.8968,	LR test of the one-sided error		377.7481
Number of restrictions	6,	Number of cross sections		94,
Number of time periods	10,	Number of observations		915

Table 30 Results of sub-group analysis

Estimated Cobb-Douglas production function parameters					
	Parameters	Large suppliers ¹⁾	Upper-mid Suppliers ²⁾	Lower-mid suppliers ³⁾	Small suppliers ⁴⁾
Dependent variable: Water accounted ⁵⁾					
Constant	B_0	-6.1684*** (0.9860)	-0.5342 (0.8456)	7.5918*** (0.5978)	5.1268*** (0.6488)
$\ln(Assets_{it})$	B_1	0.2697*** (0.0505)	0.2158*** (0.0482)	0.0185 (0.0146)	0.0516** (0.0237)
$\ln(Labour_{it})$	B_2	0.4042*** (0.0853)	-0.0667* (0.0389)	0.1858*** (0.0490)	0.1225*** (0.0354)
$\ln(Energy_{it})$	B_3	-0.2954*** (0.0615)	0.0387 (0.0425)	-0.0484*** (0.0059)	0.0380*** (0.0102)
$\ln(Water\ bought_{it})$	B_4	0.1256*** (0.0153)	0.5409*** (0.0338)	0.0022 (0.0031)	-0.00009 (0.0012)
$\ln(Maintenance_{it})$	B_5	0.3605*** (0.0372)	-0.0761*** (0.0211)	0.0071 (0.0207)	-0.0088 (0.0106)
$\ln(Other\ Cost_{it})$	B_6	0.1962*** (0.0612)	0.06263 (0.0629)	0.0296 (0.0261)	0.0743*** (0.0176)
Estimated technical inefficiency parameters					
Constant	δ_0	-0.2777 (0.2476)	0.5728*** (0.1562)	1.7665*** (0.0988)	1.3454*** (0.0909)
$\ln(People_{it})$	δ_1	-0.000001*** (0.0000)	-0.0000002 (0.0000)	-0.000005*** (0.0000)	-0.000018*** (0.0000)
$\ln(Employee_{it})$	δ_2	0.0023*** (0.0006)	-0.0021** (0.0008)	0.0001 (0.0010)	0.0037*** (0.0010)
$\ln(Main\ length_{it})$	δ_3	-0.1515* (0.1028)	0.1056** (0.0458)	0.0138* (0.0079)	0.0096** (0.0041)
$\ln(Year_{it})$	δ_4	0.1351*** (0.0257)	0.0287*** (0.0088)	0.0011 (0.0074)	-0.0029 (0.0055)
Diagnostics					
Sigma Squared		0.0154** (0.0059)	0.0171*** (0.0033)	0.0445*** (0.0048)	0.0202*** (0.0018)
Gamma		0.4646** (0.2298)	0.9999*** (0.0046)	0.3344*** (0.0724)	0.4330*** (0.1156)
Log likelihood function		63.5052	53.4019	65.6059	181.1912
LR test of the one-sided error		33.8164	42.1800	529.3759	471.7160
Number of cross sections		7	8	45	33
Number of time periods		10	10	10	10
Number of observations		70	80	443	312

Note: 1) Large suppliers serve more than 1,000,000 people, but Seoul Metropolitan was excluded.

2) Upper-mid suppliers serve between 500,000 and 999,999 people.

3) Lower-mid suppliers serve between 100,000 and 499,999 people.

4) Small suppliers serve less than 100,000 people.

5) The numbers in the upper line is coefficients (standard errors in brackets).

6) * p<0.10, ** p<0.05, *** p<0.01.

Table 31 shows that the efficiency of water suppliers has moderately worsened during the last decade. In 1996, the average efficiency rate of water suppliers reached around 43 % to that of the most efficient supplier, but their achievement reduced to 38 % to that of the production frontier. This is mainly because efficient water suppliers, mostly consisting of medium and large cities, have continuously tried to increase their efficiency, but relatively inefficient suppliers, mostly composed of small suppliers, might lack financial and technical capabilities to achieve efficiency improvements. For instance, the five most efficient water suppliers are Ansan, Suwon, Gumi, Goyang and Seoul whose population served ranges from 360,000 to 10,297,000.

Table 31 The Efficiency Trend of the Korean Water Sector

	1996	1997	1998	1999	2000
National average	0.4385	0.4359	0.4430	0.4459	0.4396
Top Five	0.6973	0.7358	0.8076	0.7822	0.7815
Bottom Five	0.2369	0.2383	0.2344	0.2299	0.2290
	2001	2002	2003	2004	2005
National average	0.4223	0.4162	0.4047	0.3945	0.3810
Top Five	0.7818	0.7807	0.7664	0.7643	0.8099
Bottom Five	0.2077	0.2110	0.1947	0.1762	0.1630

Interestingly, four of them are located in the Capital Region. Those suppliers have high financial capabilities and enjoy the economies of density. Their length of mains per person ranges between 1.37 and 3.73m. Without Gumi, located away from the Capital region, it varies only from 1.37 to 1.67m. On the other hand, the five least efficient suppliers are Jeongseon, Bukjeju, Yangpyeong, Naju and Mungyeong, whose population served ranges from 31,969 to 62,936. Their length of main per person stretches from 8.1 to 11.7m. Consequently, as Table 31 shows, the five most efficient water suppliers have remarkably increased their technical efficiency from efficiency scores of 0.6973 to 0.8099. However, the five least efficient water suppliers have experienced a significant decrease of efficiency from efficiency scores of 0.2369 to 0.1630. This implies that the policy focus of the water industry should be on improving the efficiency of the relatively small water suppliers. Nonetheless, the larger water suppliers are not always the more efficient. Rather, water suppliers serving populations of 500,000 to 999,999 (average efficiency score of 0.6775) are more efficient than

larger suppliers providing water to populations of more than 1000,000 (average efficiency score of 0.5341) as shown in Table 32.

Table 32 The Efficiency Variance according to Production Scales

Population	1996	1997	1998	1999	2000
More than 1000000	0.4386	0.4487	0.5132	0.5547	0.5721
500000 to 999999	0.6716	0.6615	0.6764	0.6912	0.6965
100000 to 499999	0.4577	0.4622	0.4702	0.4653	0.4638
less than 100000	0.3424	0.3234	0.3259	0.3230	0.3088
Population	2001	2002	2003	2004	2005
More than 1000000	0.5710	0.5716	0.5669	0.5586	0.5460
500000 to 999999	0.6826	0.6823	0.6692	0.6793	0.6645
100000 to 499999	0.4486	0.4373	0.4274	0.4115	0.3949
less than 100000	0.2874	0.2854	0.2704	0.2625	0.2534

However, water suppliers serving fewer than 500,000 people suffer from efficiency problems (average efficiency score of 0.3711). Small water suppliers serving populations smaller than 100,000 have even more serious problems (average efficiency score of 0.2983). Interestingly, Seoul, the largest water supplier, has been evaluated as the most efficient supplier since 1998. Therefore, even though water suppliers that are too small, in regards to the scales of water provision, causes inefficiency, the most efficient scale can vary. In addition, besides the scale of production, other factors might significantly influence the efficiency of the suppliers. Thus, when the proper governance and industrial organisation of the Korean water sector is designed and discussed, diverse factors beyond simply the scale of production should be considered.

The applicability of this estimator is diverse. Firstly, this estimator provides the degree and trend of efficiency of each water supplier. Therefore, it can be used as an evaluation tool on water suppliers. In the cases of low efficiency water suppliers, with additional in-depth studies, the central and local governments can identify the causes of inefficiency and improve the performance of the water suppliers. Similarly, the governments can find the successful factors of high efficient water suppliers and have other water suppliers benchmark those. Secondly, the estimator of the production function shows a relationship between a physical outcome, investments, and operation costs. This shows which factors may contribute to increasing the physical outcome. Thirdly, this model can be extended to the Korean wastewater sector and international water and wastewater sectors. In particular, the international application to other water

supply sectors may provide good comparative perspectives.

Nonetheless, this estimator has several caveats. This estimator cannot separate the impact of changing unit costs. As illustrated, though the coefficient of labour costs is large (0.4641), its impact on the physical outcome may result from rises in wages, rather than an increase in number of employees. In addition, water demand tends to be exogenous to water suppliers. Cost functions or input distance functions may provide a better estimation. However, as Subsection 9.2.3.2 stated, the cost and input distance function also has some drawbacks. Thus, additional attempts which employ diverse functional forms may increase quantitative understanding about the Korean water sector.

9.4 Concluding Remarks

This econometric analysis covers the period from 1996 to 2005. During this period, the environment-oriented governance played the main role, but started giving up its place to the market-oriented governance, when social and economic actors newly emerged and their role in the water sector significantly increased. Nonetheless, as this chapter shows, the mean efficiency of the Korean water supply sector has steadily decreased. This decrease of efficiency might be explained in three ways. Firstly, social and environmental demands have driven heavy investment in the construction of new water supply systems for remote rural areas. The rapid industrialisation of Korea made water quality drastically worse and underground water unsafe. Several environmental accidents including the notorious Phenol Contamination Case in the Nakdong River ignited the public concern about water quality. In addition, the public started recognising political and economic disparity between classes and regions, and requesting the democratisation of politics and economics. To meet the demands of the public, the Chun and Roh governments included social welfare policies in national plans including the FESDPs and prioritised the establishment of water supply systems for rural areas and the expansion of sewerage systems for elsewhere. This policy was highly likely to result in reductions in the efficiency of small water suppliers. Table 32 shows the declining efficiency trend of medium and small water suppliers. However, from the perspective of SDT, in consideration of social and environmental demands, a subjectively chosen purpose by localities, is desirable, even essential, even if this causes

inevitable decrease in efficiency. The problem is to find a way to achieve this purpose in the most efficient manner.

Secondly, the shattered structure of the Korean water industry has been a long-standing problem. Relatively efficient water suppliers having more than 500,000 population served are only 16 out of the 167 suppliers¹⁷¹. 106 local water authorities serve fewer than 100,000 people. Table 32 shows that local water authorities supplying fewer than 100,000 people seriously suffer from efficiency problems. Their efficiency was not only very low, but also consistently decreased from efficiency score of 0.3424 in 1996 to 0.2534 in 2005¹⁷². As analysed in the inefficiency model, the length of mains significantly affected the efficiency of the water suppliers more than population served. The average length of mains for small water suppliers serving fewer than 100,000 was 7.0523m per person served as of 2005, which considerably increased from 4.5610m per person served in 1996. Their average length of main is much longer than those of other groups of water suppliers.

Interestingly, water providers serving between 500,000 and 999,999 people have shorter length of mains (1.7616m as of 2005) than water suppliers having more than 1,000,000 customers (2.3316m as of 2005). This may contribute to the higher efficiency of water providers serving between 500,000 and 999,999 people. This result disproves a main argument of the market-centred approach, the massive geographical integration of water and wastewater services. Based on the market-centred argument, the ME has propelled the amalgamation of water suppliers into 39 regions, ultimately into the four largest river basins (refer to Subsection 8.3.3.1). However, this research shows that excessive scales of water provisions could rather produce inefficiency.

¹⁷¹ Korea has 167 local water suppliers among which only 106 local water authorities use the independent accounting system from the general accounting system. In addition, this research analyse 94 local water authorities which provide enough panel datasets. 12 water authorities using the independent accounting system are excluded from this research mostly because they adopted the independent accounting system in recent years. The MPAS has recommended the independent accounting system to the local water authorities providing more than 15,000m³ per day. That is, the local water authorities not adopting the independent accounting system are the smallest water suppliers.

¹⁷² Only 33 water suppliers among 106 water suppliers serving less than 100,000 are included in this analysis due to data availability. If remaining 73 water suppliers are included, their efficiency score might drastically decrease because comparatively larger suppliers in the group use the independent accounting system.

Thirdly, the fragmented governance of the Korean water sector makes it difficult to arrive at coordinated solutions. In fact, the Korean water suppliers have not had to deal with strong competitive pressures because a competitive market has not existed yet. Due to the monopolistic characteristic of the water industry, direct competition in the market has not been well developed anywhere in the world and competition for the market is also limited. More market, another basic argument of the neo-liberal approach, only transfers the water industry from a public monopoly to a private monopoly, which may not simply increase the industrial efficiency. Therefore, proper (democratic) industrial governance including a robust regulatory system, where consumers and citizens can raise their voices and participate in strategic decision making, is crucial. The environment-oriented governance and the market-oriented governance resulted from intensive interaction between actors and their response against context and events. Those actors including supply-oriented actors have destructively competed to gain policy hegemony. In particular, the competition between the MLTM, the MPAS and the ME has been intense. They have produced their own policies reflecting their vested interests and have not been willing to coordinate their policies. They have also tried to propel their own policies whenever policy windows open.

To illustrate, although the ME has stressed the vertical and horizontal integration of the Korean water industry, it has introduced separated privatisation policies. It brought in the private operation of STPs in 1997, propelled the BTL of sewer networks from 2005, and attempted to privatise the water supply sector from 2001. These policies have forced the industrial structure to be more fragmented. In the case of Nonsan City, the water and sewerage systems are fragmentally managed by four actors: the water regulatory authority, Kwater as the concessionaire of the water supply system, the sewage authority operating the STP and a private consortium taking charge of the construction and operation of sewer networks through BTL projects. This shattered structure of the Korean water industry probably hinders the integrated management of the industry. The central government tried to build cooperative water governance by establishing the Water Quality Improvement Planning Board under the Prime Minister and the Presidential Commission on Sustainable Development. However, these trials have not been successful because of the lack of legal authority of the coordinators and their member composition. The next section aims to suggest better governance for the Korean water sector based on the implications of both the historically approached

qualitative analyses and the econometric efficiency measurement presented in this chapter.

Chapter 10 Good Governance for the Korean Water Sector

10.1 Introduction

One aim of this research is to suggest good governance for the Korean water sector anchored on both processual explanations about changing the governance of the Korean water sector and an econometric account of its outcomes. The Korean water industry has changed from supply-oriented governance, through environment-oriented governance, to market oriented governance. According to Jessop's classification of governance (Jessop, 1998, p.29), Those are broadly equivalent to organisational hierarchy, self-organising heterarchy¹⁷³ and the anarchy of exchange respectively.

Despite the transition of Korea's water governance, a certain type of governance has not entirely dominated the controlling power of industrial policies. Although supply-oriented governance started giving way to other governance, main actors in the governance still exert controlling power over industrial policy making. Emerging governance has challenged existing governance. Competition between three forms of governance has not been constructive and properly coordinated. To illustrate, the IMF crisis opened a policy window for a market-centred actor, the ME. It has progressively adopted the privatisation policy for the water industry, but has been faced with strong objection from other ministries and social actors, such as the NGOs and the labour unions. Thus, the ME could not comprehensively implement the privatisation policy. Instead, whenever it seized chances, it propelled the privatisation policy. Without establishing proper governance, opportunistic behaviours of the self-interested, influential actors have caused another type of strategic failure, where policy outcomes may not serve the public interest. This research argues that self-organising heterarchy, a self-organising network by Rhodes's term (1996, pp.659-660), is most appropriate to remedy strategic failure based on SDT. By introducing SDT's notion of competitiveness (Bailey et al., 2006, p.562, Branston et al., 2006c, p.308), as defined in Section 2.4, democratic governance with competitiveness is suggested as good governance.

¹⁷³ Rhodes (1996, pp.659-660) named this 'self-organising network. From the perspective of Rhodes' governance, self-organising means 'autonomous and self-governing' while networks are a form of social coordination which develop their own policies and shape environment against government steering. This research recognises 'self-organising network' as the most appropriate form of governance for economic democracy.

This chapter starts by discussing the role of regulation and competition in governance. This is because, although competition and regulation are significant economic mechanisms, they have been mostly explained based on the market-centred thought, but governance literature has not much considered them. Based on the theoretical proposition and empirical findings of this research and understanding the relation between competition, regulation and governance, good governance for the Korean water sector is suggested in this chapter. This proposition for the governance embraces national, regional and local level of governance together with democratic regulatory governance.

10.2 The Role of Regulation and Competition in Governance

Littlechild (1983, p.7), who created the regulation system on UK utilities, says that “it (regulation) is a means of ‘holding the fort’ until competition arrives”. He sees competition as ‘the only way’ of protecting consumers against monopoly and regulation as just a ‘means’ of (temporarily) preventing the abuse of monopoly power. His opinion reflects a long-standing view of neo-classical economics. Neo-classical economics, represented by Chicago theory of regulation (Stigler, 1971, p.3, Peltzman, 1976, p.212), argues that regulation serves not the public, but the regulated industry. The regulator would be captured by the regulated industry having strong incentive to influence the regulator for regulatory rents (Baldwin and Cave, 1999, p.22). Among contending interests, the condensed interests of a small group of the producers prevail over the diffused interests of a large group of the consumers or bureaucrats in regulatory agencies (Peltzman, 1976, p.212). This approach views actors as rational maximisers of their own interests, so bureaucrats are not altruistic, but seek greater budgets or political influence. Consequently, from the perspective of Chicago theory of regulation, regulation tends to fail, so less government is the way of avoiding the failure.

This research, based on SDT (Cowling and Sugden, 1993, p.55), recognises competition as an essential means to secure productive and allocative efficiency. That is, competition can minimise production costs and keep prices corresponding to the costs. Appropriate competition reduces the monopoly power of a few market participants, mostly producers. In perfectly competitive markets, all actors are price takers, even

though some of them are larger than others. Therefore, the tendency for strategic decision makers to force their interest on other actors might significantly decrease in perfectly competitive markets (Cowling and Sugden, 1993, pp.55-56). Every actor can only decide whether they trade or not at a given price. Economic rents do not exist.

However, the market running on 'the principle of one dollar, one vote' (Chang, 2007, pp.172-173) is limited. Competition cannot solve distributional issues. If someone in a community does not have enough (financial) resources to participate in a certain market, it cannot be said that the product is fairly distributed. Objectives in a community might be more than efficiency. SDT suggests 'community control' where all members of a community can make strategic decisions (Cowling and Sugden, 1993, p.49). A community can seek long-term economic growth by sacrificing its short-term income. In case a community values distributional issues beyond price, firms in the community may compete for social responsibility. Where the objectives of a community are much more complex than simple efficiency, only market competition cannot fully satisfy them. In addition, some may act according to their belief rather than interest. This indicates that actors can be altruistic. In this case, the assumption of market competition by Chicago theory of regulation is misleading.

More importantly, imperfect competition prevails. Imperfectly competitive markets are under the control of a few actors and may serve only their vested interests. To avoid this market failure, the market-centred approach employs regulation as a means of reducing monopoly power. In many cases, the simplicity of regulatory objectives and the complexity of efficiency calculation tend to exclude lay persons from regulatory decision making processes. To illustrate, when the UK privatised the water industry, it created an economic regulator, OFWAT. The responsibility of the economic regulator is to exercise its powers to protect the interests of customers, promote economic efficiency, and facilitate effective competition (Competition Commission, 1990). This hypothesises that the public interest is manifest and able to be served by easing monopoly power or maintaining price at a reasonable level.

In contrast, SDT emphasises the mechanisms of strategic decision making rather than competition, although it sees regulation as incomplete. The core of strategic decision making is to determine the objectives (Branston et al., 2008, p.61, Cowling and Sugden,

1998, p.64). Only where strategic decisions are democratically made, the public interest can be achieved. Consequently, SDT is governance-oriented.

In line with this perception of SDT, this research sees regulation as an intermediate means towards economic democracy and a part of democratic (industrial) governance. However, it sees differently the role of regulation from the view of the market-centred approach. The governance-oriented approach regards regulation as ‘an immediate response’ to strategic failure, whereas the market-centred approach considers regulation ‘an arm’s-length response’ to market failure (Branston et al., 2008, p66). The ultimate goal of the market-centred approach is market equilibrium through market competition. However, the destiny of the governance-oriented approach is economic democracy where subjectively, democratically chosen objectives, probably including economic efficiency, are pursued.

SDT perceives that the radical introduction of economic democracy is difficult in many cases. Therefore, it suggests democratically controlled public agencies which are in charge of gathering information on firms’ strategic activities, controlling their undemocratic and unfair behaviours and representing the public interest (Branston et al., 2008, p67). The democratically controlled public agencies are different from conventional regulatory agencies in terms of their mission and regulatory decision making processes. Conventional regulators set the maintenance or increase of competition as their main objective. To illustrate, the Competition Commission posts the safeguard for healthy competition as its role. OFWAT declares consumer protection for fair deal and value from water companies as its mission. This is based on their perception that to ensure competition is to serve the public interest. However, the objectives of democratic regulators might be more than economic efficiency achieved by competition. In addition, the decision making power of conventional regulators is concentrated on a few whether they are individuals or a decision making board. In contrast, the democratic regulatory agencies should be inclusive enough to reflect the public interest in terms of all of the members of the public (Branston et al., 2008, p67).

This research does not see efficiency as the only purpose of an industry or an economy, but regards it as one of diverse objectives. As analysed in Chapter Nine, extending a local water supply system to rural areas could decrease the industrial efficiency.

However, considering social objectives as less important than simple economic efficiency is evasive. Social concerns and better service are more central than cost efficiency in some cases. This research argues that the objectives of development should be democratically determined. Nonetheless, subjectively chosen objectives have to be carried out efficiently in order to minimise the loss of resources possibly through democratic regulation and/or appropriate market competition.

The second issue developed from the efficiency analysis in Chapter Nine is the scattered structure of the Korean water industry. The analysis shows that the efficiency of water suppliers serving a population smaller than 500,000 is very low and has a decreasing pattern. As a result, integration between water suppliers has been suggested as a way of increasing efficiency. A matter is that each local government is a well-developed democratic unit of strategic decision making, which has an independent governor and local assemblymen directly elected by people in each community. The integration has a possibility to confer decision making authorities from local governments to integrated organisations. In fact, the integration of English and Welsh local water and wastewater authorities to Regional Water Authorities in 1973 moved decision making power from local governments to Regional Water Authorities. English and Welsh local communities lost their opportunities to participate in strategic decision making. The independent regulator, OFWAT, is the only organisation representing the public interest in the decision making process in the English water industry. The decision making mechanism of OFWAT is not inclusive but open to a few.

The Korean water industry faces a challenge to raise economic efficiency and to maintain local democracy. One option is a water board which is delegated water and wastewater services by several local governments, consists of representatives from related local water authorities and/or local governments and has authority for strategic decision making for its water and wastewater service. The water board can directly manage and operate its water and wastewater system or contract it out to exterior organisations such as private firms and public corporation. Glas Cymru and Dŵr Cymru (Welsh Water in English) is a good case for this type of firm-level governance (see Subsection 3.3.5). Shortly, the public interest is strongly resided in the water industry and simple efficiency may not fully satisfy the desire of a community, so more inclusive

objectives for the industry should be democratically made. However, the efficient implementation of subjectively chosen objectives may serve the public interest. Market competition and democratic regulation, this research suggests, are parts of good governance.

10.3 Good Governance for the Korean Water Sector

10.3.1 National Governance for the Korean Water Sector

Strategic decisions related to water and water sectors range between local, regional, national, and international levels. In the case of the Korean water sector, strategic decisions at local and national levels are conspicuous. This is because the regional governments do not have much authority over water and sewerage services at present, river-basin water resources management has not yet fully developed, and international water governance and/or regulation like EU directives has not been a serious issue. Nonetheless, the regional governance of the water sector is important in that water is an integral part of the ecosystem in a river basin (United Nations, 1992). Thus, the analytical focus of this research is on local, regional and national governance.

This research pays attention to ‘who governs?’ and ‘how is this processed?’ This is because ‘to govern is to control and to control is to make strategic decisions (Branston et al., 2006a, p.192)’ through certain processes. In the Korean water sector, the state is still a main actor who has legitimate power of strategic decision making, even though it increasingly shares power with non-state actors (Stoker, 1998, p.21, Kooiman, 2003, p.3). However, Decision making power over the water sector is not dominated by a single ministry, but is distributed between ministries as shown in Figure 35. The ME is in charge of the national water and sewerage master plans based on the Water Supply Act and the Sewerage Act. The MLTM sets up plans about national land development, and water resources development and management. The MPAS has power to control the organisational structure and budget of the local water authorities. When they establish or change the plans, they should consult with other ministries, but in many cases, they have no legal responsibility to reflect the consultancy results. Thus, when ministries have had opposite views or interests, they have frequently disregarded the consultancy.

The Presidential Commission on Sustainable Development has a coordinating function of water related policies. However, it has not been influential. This is partly because it has no authority to set main objectives and strategies¹⁷⁴ about sustainable development, but the right to consult them (Framework Act on Sustainable Development, 2007). The office of the commission is largely composed of officials or employees dispatched from related ministries and organisations such as the ME, the MLTM, the Ministry of Agriculture and Fishery and Kwater. The rest of the staff are mainly from NGOs and are contracted for two or three years. The staff compete for their own organisations' interests and purposes. The commission is legally independent from other ministries, but in fact, becomes a battlefield where vested interests fight each other.

Full public participation in decision making is necessary for negotiating and coordinating complex interests related to water (United Nations, 1992). This is because, with a technological approach, socio-economic, environmental and health considerations should be considered in a dynamic process (Sitarz, 1994, p.70). Korean water governance lacks this inclusiveness. Thus, the government should develop more democratic governance where ministries, experts and the public can fully participate in strategic decision making. At least, in the water sector, the democratic governance can promote sectoral competitiveness. At first glance, full participation seems to cause higher social and economic cost, but the direct involvement of the government seems to be more efficient. However, uncoordinated outcomes could cost more, and produce less. A conspicuous example is the over-investment in the Capital Region. Large cities in the Capital Region have developed their own water intake facilities to reduce costs even though they requested the construction of multi-regional water supply systems and have enough allocated capacity from these systems. The misallocation of water resources is another example. Even though a local government has excessive water supply capacity or water resources and a neighbouring local government suffers a lack of water, in many cases, the misallocations have not been properly readjusted. This is because the local governments having excessive water rights tend to save them for future need. Agenda 21 (United Nations, 1992) indicated that "The fragmentation of responsibilities for water resources development among sectoral agencies is proving to be an even greater impediment to promoting integrated water management than had been anticipated."

¹⁷⁴ The major objectives and strategies include the national strategies for sustainable development, national implementation plans and the establishment of sustainable development indicators.

By referring to a membership model of SDT (Branston et al., 2006a, p.200), this research suggests establishing a national water commission for integrated water resources management where diverse actors including 'lay citizens' are involved as decision makers. The role of this commission is to set broad objectives of integrated water resources management and to arbitrate disputes concerning inter-regional issues. The governing structure of the commission has to be democratic.

The governance of the BBC, the British Broadcasting Corporation, is an interesting possibility as Branston and Wilson (2006, pp.13-17) show. The BBC Trust holds the BBC's top management to account. The BBC Trust is composed of 12 members who have wide experience from broadcasting, regulation, business and the public sector (BBC Trust, 2009e). Trustees for England, Wales, Scotland and Northern Ireland are expected to demonstrate regional knowledge and understanding of public broadcasting issues (BBC Trust, 2009b). The governance of the BBC includes the Audience Councils in England, Northern Ireland, Scotland and Wales (BBC Trust, 2009a). Each of the Audience Councils is chaired by the Trust members for the UK nations and is composed of 12 members. In addition, The Audience Council England is supported by a network of Regional Audience Councils. The members of Audience Council England chair Regional Audience Councils. This governance structure for the BBC is for serving the best interests of the public who owns and pays for the BBC (BBC Trust, 2009c). The BBC Trust sets 'the strategic direction of the BBC' while the Executive Board of the BBC is responsible for operational management (BBC, 2009). Through the network of councils, the governance for the BBC intends to reflect 'the diversity of the UK' and to serve public purposes (BBC Trust, 2009a).

The newly established commission has to be organisationally independent from interested ministries and organisations, and must consist of members representing diverse interests including consumers, residents, businesses and experts from all regions. The commission must be an independent office which has its own (permanent) staff by excluding dispatched officials from ministries and organisations. The idea of a 'Register

of interests' of the BBC trustees¹⁷⁵ can be applied to the staff and members of the commission. Instead of only consulting main policies, the commission should set objectives and strategies of water, and the water industry and arbitrate disputes between actors.

At the level of water-related national plans, citizens' participation in the plan making processes is currently restricted. To illustrate, the Water Supply Act does not include a consultancy process with the public for the Comprehensive National Water Supply Plan even though the ME has customarily consulted with experts and held public hearings in the research stage of the Comprehensive National Water Supply Plan. The NWRP has a similar decision making process. These processes are for 'hearing', but not for 'discussing and deciding'. Both plans are comprehensive, fundamental water plans which determine the aims, purposes, directions and scope of water resources management and water services. Those plans restrict subordinate plans including the Basic Plan for Water Supply Maintenance and the Basic Plan for Dam Construction. This is because, as shown in Figure 36, the water-related plans have a hierarchical structure. Thus, to decide the fundamental plans is to control water policies

10.3.2 Regional Governance for the Korean Water Sector

Korea's regional governance of the water sector is significantly fragmented. The regional governments such as provinces and metropolitan cities are in charge of physically maintaining national rivers and managing regional rivers.¹⁷⁶ However, in most cases, rivers run across regions. Thus, rivers in Korea are fragmentally managed by several levels of government. In addition, the MLTM and the ME have their own regional branches. The regional branches of the MLTM take charge of the permission of water extraction and construction for river improvement. The regional branches of the ME, which are based on great river basins, are in charge of environmental regulation and water quality protection.

¹⁷⁵ BBC trust members make a public declaration of their personal and business interests. When their interests conflict with those of the BBC, the other trustees decided whether it is proper for the trustee to participate in the discussion or decision on the issue involved (BBC Trust, 2009d).

¹⁷⁶ Rivers in Korea are classified into national rivers, regional rivers and small rivers. The central government has the authority as the national river manager and delegates the maintenance of the national rivers to the regional governments. The regional governments manage regional rivers as the regional river managers. The local governments manage small rivers as the small river managers.

In addition, The ME organises and manages River Basin Management Committees for the four major national rivers. The committees have the role of advisors for environmental plans of river basins and the collection and use of the Water Use Levy¹⁷⁷. The governance of these committees is relatively democratic. The Committees are chaired by the Vice Minister of Environment and composed of vice governors of metropolitans and provinces, the president of Kwater, a high ranking official of the MLTM and a director of the Korea Electric Power Corporation. However, the River Basin Management Committees are not decision making bodies and their role is confined to consultancy. The advisory committees under the River Basin Management Committees consist of 'lay residents', NGOs, businessmen and environmental experts, but they are recommended by governors of metropolitans and provinces. Therefore, the governance of the committees is still in a process of democratisation.

To solve these problems, the regional governance of the Korean water sector must be more inclusive. The River Basin Management Committees must represent the public interest by incorporating a wide range of stakeholders and be the strategic decision making and arbitrating bodies rather than consulting committees. The committees are more effective being independent from the ME and the MLTM. The river basin committees may have an independent, but hierarchical relation with the national water commission as discussed in the previous section. As an independent governing body, a river basin committee has to have its own authority to decide regional water issues. In terms of arbitration, actors may appeal against the decision of the regional branches of the ME or the MLTM to the river basin committees. If the actors are dissatisfied with the arbitration of the river basin committees, they are permitted to appeal to the national water commission.

The roles of the river basin committees and the branches of the ME and the MLTM should be clearly defined. The river basin committees may focus on issues related with diverse interests within a river basin such as the allocation of water resources, the

¹⁷⁷ Water Use Levy is charged to end users of water extracted from four great rivers in proportion to their amount of water used (Korean Parliament, 2008). The levy is used for the improvement of river water quality including the construction of sewage treatment plants and the purchase of riverside land. 2007 Water Use Levy in the Han River basin was 150 Korean won (8.25 British pence) per m³, which is equivalent to 24.8 per cent of average piped water price (ME, 2008, p.1).

amount and use of the Water Use Levy, and the designation of water supply source protection areas. The branches of the MLTM and the ME play the conventional roles such as environmental regulation and the permission of water abstraction respectively.

10.3.3 Local governance for the Korean Water Sector

Locality is a basic unit where water and sewerage services are provided and consumed. Thus, local governance is related to service providers, service users, local governments and assemblies, and local NGOs. Thus, relations between actors and issues are more direct and concrete than those in the national or regional governance.

In principle, the local governments are water and sewerage service providers. Most local governments directly supply potable water, while private management and investment have been actively introduced in the sewerage sector. Citizens can participate in the water and sewerage tariff determination processes as members of the Local Price Policy Committees. The local governments usually set the tariff determination processes by municipal ordinances. Each year the MPAS suggests a guideline for the tariff determination, each local government prepares a proposal for tariff revision, the Local Price Policy Committee consults on the proposal and then finally the local assembly decides the tariff. To illustrate, Seongnam has a Consumer Policy Consultation Committee consisting of 20 members of whom seven represent citizens and consumers such as civic groups, a restaurant association and a bath association.

This tariff determination process is formally democratic, but has been often captured by the vested interest of political leaders and large users. Thus, water and sewerage prices have mostly been kept below real costs. Yet, low prices undermine the soundness of water infrastructure by postponing investment needed for the future. Some argue that privatisation is the solution of low investment and under-pricing. As Branston et al. (2008, p.60) say, however, concerns with private and public ownership are superficial without considering the mechanisms of strategic decision making.

As many countries, including the UK, have experienced, high (private) investment inevitably results in high price. This research suggests that more open, fully democratic participation in strategic decision making processes, including price determination, is

the best way to solve the problem. By sharing information and learning situations, citizens and other actors in the democratic governance might find a better way for service provision. The Glas Cymru case in Wales shows that the public-interest ownership can provide a lower price by reducing capital costs than the previous private ownership (Kay et al., 2007, pp.184-185, Bakker, 2003a, pp.369-370). Thus, as analysed in Subsection 3.3.5, Glas Cymru and Dŵr Cymru can be an interesting possibility for the democratic local governance of the Korean water sector.

10.3.4 Regulatory Governance for the Korean Water Sector

Water quality regulation is not well coordinated with water quantity regulation in Korea. Water quality regulation is under the control of the ME, but partly implemented by the branches of the ME and the local governments. The ME sets the standard of river and potable water quality, gathers water quality information, and formulates water environment-related plans. The ME lacks the comprehensive understanding of water quantity information. Similarly, the MLTL takes charge of water quantity regulation¹⁷⁸. The MLTM dominates the information of water quantity in national rivers. However, the MLTM suffers a lack of water quality information. This makes the environmental regulatory governance weak. Therefore, the environmental regulatory governance of the Korean water sector should be comprehensive enough to consider water quality and quantity issues together. The model of the national water commission can be a solution to achieving this comprehensiveness. As well balanced coordinators, the national water commission and river basin water committees may provide a way to collect, to analyse, and to share water quantity and quality data for more efficient regulation.

The economic regulatory governance of the Korean water industry is more fragmented and less democratic than the regulatory governance of water quality. 56 local water suppliers and 69 local sewerage service providers out of 164 municipalities¹⁷⁹ are

¹⁷⁸ The water quantity regulation is based on a licensing system. The MLTM exclusively decide whether it permits a licence for water abstraction or not within the capacity of river water.

¹⁷⁹ 164 municipalities are official water and wastewater providers in Korea as of 2009. They have separated water and wastewater service providers. However, they can contract out entire water or wastewater service systems or a part of the systems.

excluded from the management evaluation system of the MPAS¹⁸⁰. The performance of private STP operators is also outside of any appropriate evaluation system. Kwater, the multi-regional water supplier, is under a different evaluation system controlled by the Ministry of Strategy and Finance¹⁸¹. As analysed in Chapter Nine, this fragmented regulatory structure has been a main cause of the inefficiency of the water sector. Moreover, the current regulatory structure makes it difficult to coordinate diverse interests, to set integrated objectives in a democratic way and to appraise the performance of the objectives comprehensively.

The objectives of the economic regulation have been determined by a few elites. For example, the Local Public Enterprises Act sets the achievement of economic efficiency and the public interest as the management principles of local public corporations. However, performance indicators to evaluate the extent of achieving the principles are set by the Management Evaluation Committee on Local Public Enterprises. The committee is composed of five to seven members having expertise in the water sector and chaired by an assistant deputy minister of the MPAS. That is, the definition of the principles and ways to achieve those are determined by the small number of the committee members.

The performance evaluation system focuses on short-term efficiency. New investment for service expansion to rural areas and the improvement of water quality is likely to have negative impact on the short-term efficiency of service providers. To illustrate, the weight of short-term efficiency measures such as operating profit and cost ratio, debt ratio and the operating rate of facilities was around 40 per cent of the performance evaluation (Ministry of Government Administration and Home Affairs, 2008a, p.12). In contrast, long-term objectives including the increase of water supply rate and the decrease of water leakage rate was weighted less than 20 per cent¹⁸². The short-term efficiency and the long-term investment measures have a trade-off relationship. For

¹⁸⁰ The laws mandate the MPAS to evaluate the performance of only local enterprises, so the performance of water and wastewater service directly provided by the local governments is not evaluated.

¹⁸¹ The Ministry of Strategy and Finance evaluates central government-owned corporations every year. Major Korean national utilities such as water, gas, electricity are owned by the central government.

¹⁸² The MPAS revised the performance indices of the water sector in 2008 which increase the weight of long-term investment indices to 25 per cent and reduce the weight of short-term efficiency indices to 28 per cent (Ministry of Government Administration and Home Affairs, 2008b, p.14).

example, if a water supplier invests in a new water supply system for a rural area, the water supply rate of the population may increase, but financial ratios would significantly decrease. In general, the increase of the water supply rate is marginal, but the amount of money for new investment is significant, so new investment negatively influences the performance evaluation.

Democratic regulatory governance seems to be a means of ‘holding the fort’ until ‘fully democratic industrial governance arrives’. This is because, as Branston et al. (2008, pp.66-69) indicate, the immediate introduction of democratic national and/or local governance for the water industry can be a radical step. ‘A democratically controlled public agency’ (Branston et al., 2008, p.67) is a means for democratic regulatory governance¹⁸³. The Korean water industry does not have an independent economic regulatory agency. The MPAS plays the role of economic regulator on the local water corporations by setting the targets of the water industry and evaluating the performance of the local water corporations. However, this regulatory governance tends to be easily captured by political interests (Baldwin and Cave, 1999, p.69). This is partly because Minister of the MPAS is under the strong pressure of political leaders and the minister’s term of office is not legally guaranteed. This regulatory structure is also weak in expertise. The MPAS has only few experts in regulation, but also they are frequently changed due to regular job rotation policy.

Many countries have an independent regulator of the water industry to overcome these obstacles. OFWAT in the UK is a good example. Based on a market-centred ideology, OFWAT was established to protect consumers against the monopoly power of water companies and facilitate competition in the market (OFWAT, 2008, pp.4-5). However, the governance structure of OFWAT is not fully democratic. The UK government selected the Director General as a single independent regulator, assisted by an office, OFWAT, when it privatised the water industry in 1989 (refer to Subsection 3.3.3.1).

However, the over-concentration of power to a single individual regulator has caused regulatory uncertainty (Helm, 1994, p.28). Helm (1994, p.28) continues that uncertainty

¹⁸³ The democratic and independent regulatory agency may ‘have responsibility and ability to gather information on firms’ strategic activity, and present accounts in light of the public interest’

affects the pricing of utility shares in the equity market and distorts the allocation of resources such as over or under investment in the product market. It was argued that collegiate regulation is able to reduce the potential of corruption and increase the accountability and legitimacy (Baldwin and Cave, 1999, p.324). Consequently, the functions of the Director General were transferred to the Water Service Regulation Authority on 1 April 2006.

This change of the regulatory governance may replace ‘the rule of man’ with ‘the rule of law’ and increase the possibility of open deliberation in which interest groups can attend (Baldwin and Cave, 1999, p.324). Nonetheless, the decision making structure of OFWAT is still far from democratic regulatory governance. The board members of the Water Services Regulation Authority are appointed in a top-down way and made up of a small number of experts. This decision making structure of OFWAT seems to be weak at representing or reflecting diverse interests. The Consumer Council for Water represents consumers’ interest as an independent consumer organisation from the government and the regulator (Consumer Council for Water, 2010). However, its role is very limited, for example, within taking up consumers’ complaints and doing research about important issues on the behalf of consumers. From the perspective of SDT, the UK water sector has not reached the stage of democratic regulatory governance yet.

The UK water regulatory governance can be selectively benchmarked by the Korean water sector. The fragmented performance evaluation system of the Korean water sector is likely to be coordinated or unified through regulatory governance. Water and wastewater service providers will be under stronger pressure for efficiency improvement. Nonetheless a newly established economic regulator has to be controlled in a democratic way. A regulatory agency model seems to be more open to the public than a Direct General model. However, the decision making board of the agency must be able to represent the public interest. The BBC governance model can be applied to Korea’s regulatory governance. The governing board of the agency can include members representing regional issues and consumer interests with some experts. The well-organised consumer body in the English and Welsh water industry, the Consumer Council for Water, is a good case for consumer representation. However, its role has to be extended to participate in regulatory decision making as members of the governing board.

Economic and environmental regulation has to be properly coordinated because they are reciprocal. To illustrate, the level of environmental standard directly impacts on the level of investment, whereas the level of investment may limit the level of environmental standard. The national water commission can set the targets or objectives of economic and environmental regulation in a democratic way. In case the interests of economic and environmental regulators conflict, the national water commission can arbitrate the dispute.

10.4 Concluding Remarks

This chapter aimed to suggest that democratic governance with competitiveness for the Korean water sector is good governance. In this research, ‘democratic’ means the inclusiveness of decision making processes and the localities of subjectively chosen objectives as discussed in Chapter Two. ‘Competitiveness’ refers to the degree to which an industry, an economy or a country can improve upon subjectively chosen objectives in a sustainable way, compared to others (Pitelis et al., 1996, p.160). By clarifying the relation between regulation, competition and governance and comparing simple efficiency with inclusive purposes, this chapter prepared a basis of discussing good governance. This research regards democratic regulation as not only an intermediate means toward economic democracy but also a part of democratic governance. Competition is a mechanism for fostering efficiency. Therefore, subjectively chosen objectives through fully democratic decision making process can be carried out efficiently and effectively through democratic regulation and appropriate (market) competition.

As analysed in this research, the governance change of the Korean water sector is the result of interaction among events, actions and context. Due to intense, uncooperative interaction between actors and their opportunistic responses to events and context, the governance structure of the sector has been fragmented, and the outcomes of the sector have been inefficient and have not served the public interest properly. In the national level of the governance, decision making power over the water sector has not been dominated and conflicts between ministries have not been coordinated. This chapter suggested a national water commission which is in charge of setting broad objectives of

integrated water resources management and arbitrating disputes about national or inter-regional issues. Water-related ministries including the MLTM and the ME may have the authority for making national water plans, but through democratic processes. A possibility is to set up democratic committees for the national water plans which investigate, decide and approve the plans beyond merely consulting on plans.

The present regional governance of the Korean water sector is also fragmented. The function of river management is split according to the boundaries of regional governments and the role of water-related organisations. Integrated river basin management is not yet developed. This chapter recommended that the current River Basin Management Committees should change their role from consulting to decision making. The committees have to be more democratic and independent from the ministries. The role of the committees has to be clearly differentiated from those of the branches of the ministries. The function of the committees can be to deal with conflicting interests between regions and actors within a river basin concerning, for example, the allocation of water resources. The regional branches of the ministries may take the typical roles such as environmental regulation and the construction for river improvement.

At the local level, the local governments have the authority of providing water and wastewater services in law. In many cases, the services are contracted out to private or public corporations. Nonetheless, the democratic participation of citizens in the decision making process for water and sewerage provision is still limited. Referring to the Glas Cymru and Dŵr Cymru case, this research suggests a fully democratic model of water and wastewater service provision. This model is characterised as democratic governance for strategic decision making and competition for operation and management. Recently, the integration of local water and wastewater services has been suggested as a way of overcoming small scales of the service provision. As the Glas Cymru and Dŵr Cymru case shows, this model can be applied to regional service provision without much difficulty.

This chapter suggested a type of regulatory governance. One of the most significant problems of the current regulatory governance is the fragmentation and discordance of regulations. Water quantity regulation is not well matched with water quality regulation

and economic regulation competes with environmental regulation. The model of the national water commission and river basin committees may provide a way of solving the coordination problem.

This research analysed the evolution of the Korean water sector through a theoretical framework mainly based on SDT. The analyses are the basis of suggesting good governance for the Korean water sector in this chapter. The next chapter, the conclusion of this research, summarises the whole findings of this research, consider its limitation and contribution, and recommend future research.

Chapter 11 Conclusion

11.1 Overview and Findings

This research challenged the neo-classical school and the state-centred thought about economic and industrial development by postulating that centralised decision making by a few elites results in strategic failure. To verify this argument, this research chose the Korean water sector as a case since Korea has experienced rapid development of the water sector and a radical change of governance in a relatively short period. SDT, the basis of this research, led this research to focus on the structural aspect of decision making. However, SDT had not yet considered a collective action problem of democratic participation of rational actors. This research attempted to extend the application of SDT in order to better explain the development of the sector. Firstly, the focus of this research was more on the ‘processual development’ of the Korean water sector than its ‘structural state’ by adopting Barzelay’s institutional processualism. This developmental process is shown in Figure 37. Secondly, this research explicitly explained the reason why social actors actively participate in strategic decision making in spite of collective action problems by utilising Moe’s concept of purposive incentives. Thirdly, this research developed a participatory map based on Pitelis and Sugden (1986), Pretty (1995) and Arnstein (1969) with which it analysed the changing level of participation in three layers of decisions corresponding to the transition of the Korean water sector governance.

As comparators, the Japanese and Taiwanese economies were reviewed in Chapter Three. Though they were both classified as the state-led economies (Johnson, 1982, pp.17-19), the two economies took different developmental paths. Because of Japan’s economic policies favouring large firms, the state and big business developed a very close relationship, and large firms exerted significant controlling power over its economy and industries. In contrast, in Taiwan, flexible networks between firms were a basis of its competitiveness. Yet, through the liberalisation of its economy and the privatisation of large public firms, the Taiwanese economy has transferred to a centralised structure of large firms since the 1990s. The Asian financial crisis in 1997 hit the highly geared Japanese economy promoted by big business friendly economic

policies, whereas the Taiwanese economy was less affected due to its relatively sound financial structure. However, both countries suffered from the ‘hollowing-out’ of their economies which resulted from large firms’ outward FDI in order to make more profits and/or overcoming trade barriers. This comparative case study shows failures of the state-led economy and the market-driven liberalisation, where a few business and political elites dominate decision making.

The central government of England and Wales, Italy and Argentina propelled market-centred water reforms. Yet, due to embedded contexts in the countries and counteractions of related actors, their developmental paths were vastly different. The English and Welsh water industry was divested, the Argentine water sector was mostly entrusted to private firms through concession contracts, and concession to public or mixed firms was generally the case in Italy. These industrial structures together with the monopolistic characteristic of the water sector have significantly impacted on industrial governance. In England and Wales, and Argentina, private monopolies and a few regulators dominate decision making power over the sector, but the public has little chance to participate in the decision making process. Both countries experienced severe failures in the water sector because of private firms’ profit-seeking strategies, the insufficient capabilities of the regulators and the nature of the undemocratic decision making process. In contrast, in Italy, the local governments retained direct participation in strategic decision making process of ATO authorities via their position as members. Though its water sector reform has been slow, it has not yet suffered from the failures evident in the other aforementioned markets.

As Kooiman and Vliet (1993, p.64) note, governance is the outcome of intensive interaction between all relevant actors. Yet, their actions are conditioned by context and the actions shape the context (Pettigrew, 1997, p.338). This research dissected the complex compounds of context and action in the Korea water sector with events, and causally explained the development of the sector using institutional processualism (Barzelay et al., 2003, Barzelay and Gallego, 2006). A contextual analysis in Chapter Five explained how physical, socioeconomic and environmental conditions constrain the feasible choice set of actors. Topographical and climate conditions make the seasonal and regional variation of water resources enormous. Korea’s response to these natural conditions was the construction of large dams and the establishment of multi-

regional water supply systems, in order to store heavy rainfall in summer for the dry spring and to carry water from the great rivers to water-lacking cities and regions. This formed a multi-regional water supplier owned by the central government, which supplies water to local governments. 167 local governments provide water supply and sewerage services to residents. As in most countries, due to the physical characteristics of water, water and wastewater services have been monopolistic at the local level in Korea.

The condensed industrialisation during the 1960s and 1970s changed the socioeconomic context. This can be characterised as being rapid economic and population growth after the Korean War, and the transition of human and economic resources from rural areas to urban areas. To illustrate, GDP per capital increased from USD79 in 1960 to USD10,841 in 2000 in terms of nominal value. The Capital Region accounted for more than 48% of total population and more than 40% of GDP as of 2005 (Korea National Statistical Office, 2006c, Bank of Korea, 2007c). Consequently, the investment of infrastructure including water has been concentrated in urban and/or industrialised regions. The economic and societal gap between cities and rural regions became a controversial political issue. This significantly influenced policies about the Korean water sector. Furthermore, Korea's rapid industrialisation caused the substantial degradation of water quality and consecutive water pollution events. People, therefore, started distrusting potable water, the governments, the regulators and suppliers of water. This environmental context was critical to the evolution of the Korean water sector.

Figure 37 shows the developmental process of the Korean water sector from the supply oriented governance, through the environment-oriented governance, to the market oriented governance. This was analysed depending on institutional processualism. Under the authoritarian developmental state, the supply-oriented governance structure was created and became dominant as analysed in Chapter Six. The desperately poor state of Korea after Japanese colonialism (1910-1945) and the Korea War (1950-1953), together with the failure of the Rhee Syng-man regime's (1948-1960) economic policy legitimised the strong hand of the Park Chung-hee junta. The military regime adopted a plan rational economy with which a few technocrats and political leaders designed and implemented economic and industrial policies. The plan rational economy set water supply targets for industrialisation and economic development, established Korea Water

Resources Corporation, and enacted supply-oriented laws and rules to effectively meet the targets. Founded on a 'development first' ideology, the elites could establish 'the supply-oriented governance structure' of the water sector which was not strongly challenged by other ministries or environmentalists. Nonetheless, the supply-oriented governance neglected the proper treatment of sewage and the improvement of water quality, which partially contributed to consecutive water pollution accidents in the 1990s. The disparity of water services between regions, and intensive subsidies to large cities and industrial areas for the water services were another socio-economic problem caused by the supply-oriented governance structure. Due to the aftermaths of the unbalanced development strategy and the suppressive manner of the authoritarian state, strong pressure from the public for democratisation rose and the strong state started dismantling. These events became seeds of the environment-oriented governance of the Korean water sector.

Chapter Seven showed that the phenol contamination event in the Nakdong River in 1991 shook the relatively stable supply-oriented governance of the water sector. Before the event, the environmental movement was confined to a small number of environmentalists and a few selective industrial pollution events. Yet, the event impacted a large number of unspecified citizens. The scale of environmental pollution combined with the perception that a large business illegally discharged the pollutant generated huge environmental movements from localities across the nation. This mobilised political leaders including President Roh Tae-woo (1988-1993) and national assemblymen. Organisational and institutional change followed. The ME took over the Water and Sewerage Bureau, and in so doing, took charge of water and sewerage policy from the MLTM. The Water Quality Improvement Planning Board was created under the Prime Minister to coordinate and integrate water related policies from various ministries. The event let the ME become an axis of water resources management. Comprehensive water quality and quantity management plans had been established and implemented, including the Comprehensive Plan for Clean Water Supply in 1990, and the Comprehensive Water Management Plan in 1996. According to these plans, financial resources were distributed and laws and regulations were amended. As a result, environment-oriented governance was created.

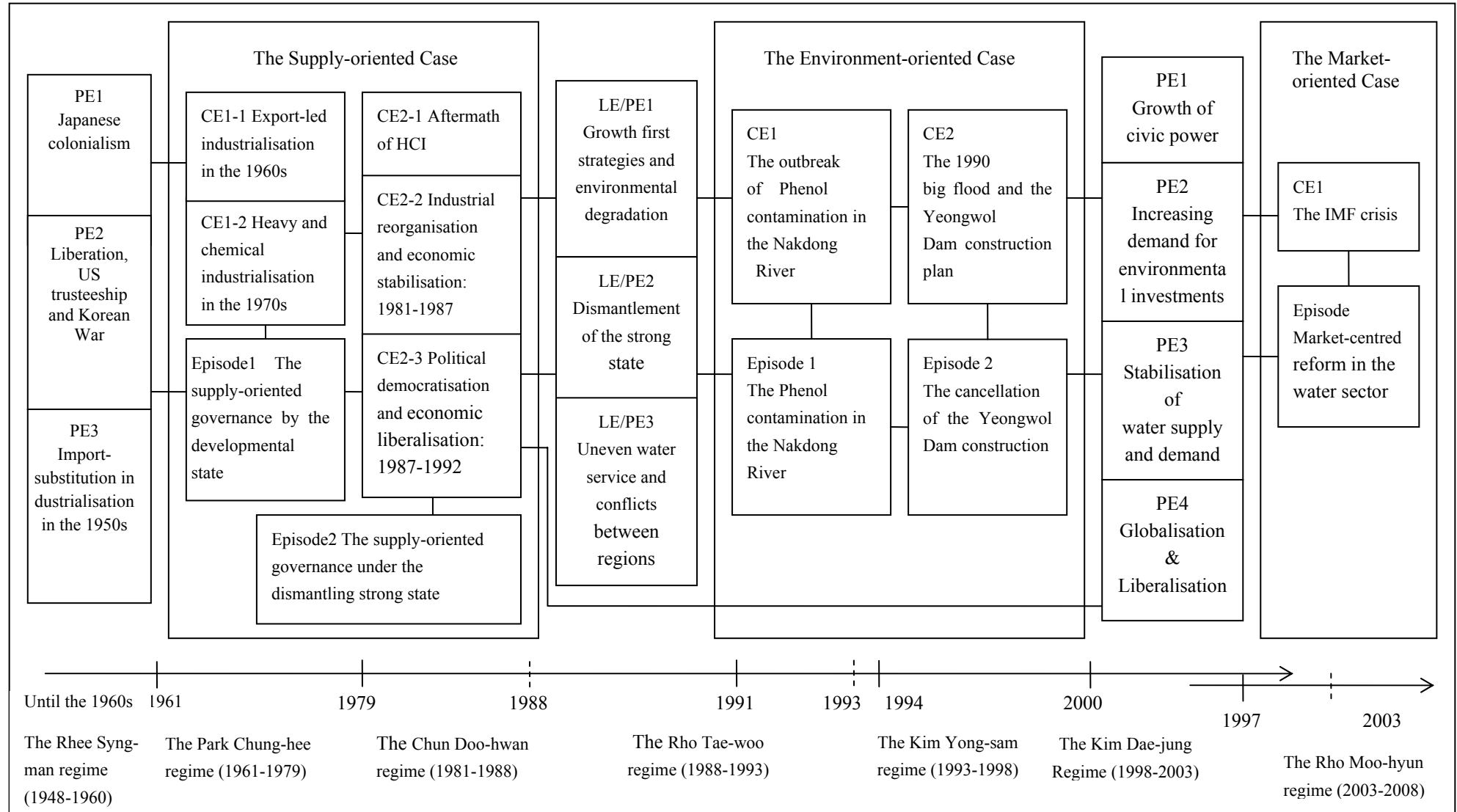
While the phenol contamination event was an accident, the Yeongwol Dam cancellation

was an intended result by environmental NGOs. The Korea Federation of Environmental Movement, a leading NGO, strategically approached the Yeongwol Dam construction plan by questioning dam safety, accentuating the Dong River's ecological value and suggesting a water demand control policy instead of a supply-oriented policy. Their strategies attracted the attention of the media and gained wide consensus from the public. As a result, the dam construction plan was officially cancelled by President Kim Dae-Jung in 2000.

Increasing demand for environmental investment in the water and sewerage sector, and the stabilisation of water supply and demand helped the ME to hold hegemony in policy making as investigated in Chapter Eight. It selected privatisation, reflecting the globalisation and liberalisation policy of the Kim Yong-Sam regime. Furthermore, the IMF crisis supported the privatisation policy, which let the ME successfully introduce a privatisation policy of sewerage treatment plants including the divestiture of the sewerage operating division of Environmental Management Corporation, a state-owned corporation, under the control of the ME. This policy created several private actors in the sewerage sector, backing the establishment of the market-oriented governance in the Korean water sector.

Based on the success of sewerage privatisation, the ME furthered the privatisation policy by setting up the WIPP. The ME's strategic decisions have significantly changed the industrial structure as several private companies were created. A Chaebol, Kolon, has attempted to participate in both sewerage and water sectors, whilst Kwater, a state-owned corporation, has become involved in local water supply. Nonetheless, the policy formation and implementation were limited due to the objection of other competing ministries and local governments. Privatisation in the sewerage sector has mostly focused on new plants and networks because the ME's subsidy for the new investment has been a useful resource for implementing the privatisation policy. Environmental NGOs and labour unions started conceptualising water as a common good. They have systematically and collectively resisted the privatisation policy by organising forums and publishing the failure case of the water privatisation. This deterred the further progress of industrial privatisation.

Figure 37 The Developmental Process of the Korean Water Sector Governance



From the perspective of SDT, the Korean water sector has evolved from the centralised supply-oriented governance, through the more democratic environment-oriented governance, to the relatively concentrated market-oriented governance. Yet, a certain type of governance cannot dominate the water sector. Furthermore, the interests and beliefs of diverse actors have not been coordinated and integrated within a proper governance structure.

This research verified the existence of identifiable purposive incentives such as belief, ideology and moral as another driver of human action. Under the supply-oriented governance, students, religious leaders, NGOs and a few labour leaders devoted themselves to political and economic democratisation, which was beyond their self-interest. They formed a democratisation network which competed with a growth first network consisting of material actors who were incentivised by material incentives. In the environment-oriented governance, ordinary citizen and local NGOs with purposive incentives entered into the governance as main actors by forming environment-oriented networks. These networks were against development-oriented networks. During the process of the market-centred governance, NGOs perceiving water as human right counteracted the privatisation of the water supply sector with labour unions. The purposive actors formed an anti-privatisation network with labour unions. This network played against a pro-privatisation network and a pro-corporatisation network.

Concerning the level of public participation, under the supply-oriented governance, the public had little chance to participate even in working decisions. The growth first network controlled the fine details of every level of decision making. Raising voice outside decision making processes was the only choice of the public. Nonetheless, social actors had accumulated their power and the strong state started dismantling. In the environment-oriented governance phase, social actors increasingly participated in the formal process of strategic decision making as main actors. In particular, ordinary citizens and victims were actively involved in the environmental movement. The market-centred reform backed by the neo-liberalism rather constricted democratic participation. The public could not participate even in working decisions, though local governments were a key decision maker in operational and working decision making.

Through the efficiency analysis in Chapter Nine, this research tested the sources of

inefficiency, market-oriented arguments about scale economies and drew critical issues for good governance. Firstly, the efficiency of the Korean water sector showed a decreasing pattern. The main sources of decreasing efficiency were the passage of time and the length of mains. Water suppliers serving less than 500,000 people significantly contributed to the decreasing pattern. Huge social and environmental investment for remote rural areas might cause the decreasing efficiency of small and medium water suppliers. Yet, it might increase social equity which can be a subjectively chosen objective by localities. From the perspective of SDT, social equity can be more important than simple efficiency.

Secondly, the market-centred reform led by the ME pursues the integration of water suppliers into 39 regions based on the postulation of scale economies (ME, 2010, p.2). However, this analysis showed medium water suppliers serving between 500,000 and 999,999 people were more efficient than large water suppliers having more than 1,000,000. This is highly likely to result from shorter main lengths of medium water suppliers (1.76m per person) than that of large suppliers (2.33m per person). In contrast, the shattered structure of the Korean water sector also hampered its efficiency. 106 local water authorities serving less than 100,000 people suffered from the dreadful efficiency problems which decreased the efficiency score from 0.34 in 1996 to 0.25 in 2005. Thus, based on the calculation of optimal scale and through democratic agreements between localities, integration should be implemented. Thirdly, the fragmented governance of the Korea water sector caused destructive competition between related actors, especially the ME, the MLTM and the MPAS. This has hampered the effectiveness and efficiency of the industry as illustrated in Subsection 9.4. Thus, proper democratic governance with a sound regulatory system is necessary for the Korean water sector.

Chapter Ten suggested good governance for the Korean water sector based on the analytical results of a complementary strategy utilising a processual analysis and an econometric analysis. As national level governance, this research recommended the establishment of a democratic national water commission which is in charge of deciding the principles, objectives and targets of integrated water resources management, and arbitrating disputes concerning national or inter-regional issues. This suggestion is based on the perception that uncoordinated outcomes cost more and produce less. For regional governance, river basin water committees are suggested, which are independent

from the ministries, and have independent, but hierarchical relationship with the national water commission. Corresponding to national objectives and targets for water, the committees set regional objectives and targets, and arbitrate regional conflicts. As local level governance, this research suggests ‘company limited by guarantee’ by benchmarking diverse comparative cases. This local governance model can be characterised as democratic governance for strategic decision making, and competition for operation and maintenance.

11.2 Contributions

11.2.1 Contributions to Literature

This research provides evidence for a governance-oriented explanation of economic and industrial development. A market-centred approach based on the ‘Washington Consensus’ has been the mainstream explanation of economic development, although some scholars such as Johnson (1982) and Wade (1990) have challenged neo-liberal ideas by suggesting state-guided market economies. SDT, the theoretical basis of this research, pays attention to failure caused by the concentrated decision making structure of the (imperfect) market and the state (Cowling and Sugden, 1999, p.361). Instead of prescribing more market or more government, SDT stresses democratic governance as the way of avoiding strategic failure, where decision making power is decentralised to every members of a community, whether the community is local, regional, national or international.

This research tried to enrich the theoretical perspective of SDT by incorporating beliefs as another driver of human behaviour with interest founded on Moe’s suggestion of purposive incentives (1981, p.536). The analytical focus of SDT has been on the extent to which the decision making structure of firms, industries and economies is centralised and on ways by which the centralised decision making structure can be democratised. However, SDT does not explicitly consider the reasons why actors want to participate in democratic decision making. Collective action problems reveal the limitation of democratic participation of interested actors in that democratic participation itself is a common good (Schlager, 1995, p.262). The case of the Korean water sector shows that environment-oriented governance emerged by the active responses of purposive groups

against the supply-oriented governance of the Korean water sector. By developing a participatory map based on Pitelis and Sugden (1986), Pretty (1995) and Arnstein (1969), this research explicitly analysed the level of participation corresponding to the level of decisions as explained in the previous section.

SDT is still in the process of developing analytical frameworks. Thus, the analytical focus of SDT has been mostly on the structural state and decision making mechanisms of organisations, industries and economies. This is mainly because SDT has challenged the structural aspect of market-oriented institutions, where a few elites dominate strategic decision making for their vested interest. This research attempted to extend the analytical focus of SDT from ‘steady state’ to ‘processual dynamics’ by recognising that social reality is in a process of evolving (Pettigrew, 1997, p.338). This research introduced a processual approach, namely institutional processualism (Barzelay and Gallego, 2006), in order to explain why and how industrial governance of the Korean water sector has developed. The governance change of the Korean water sector was a result of intensive interaction between actors, events and context. The case of the Korean water sector showed that physical, socioeconomic and environmental context preconditioned the range of feasible alternatives of actors and the structure and development of the sector. Previous and contemporary events were direct causal sources of governance change in the Korean water sector. Nonetheless, the change of governance is processual, but not complete. With this historically grounded explanation, this research intended to add an analytical perspective to SDT.

11.2.2 Contributions to Practice

This research may practically contribute to the development of the Korean water sector in two ways. Firstly, this research tried to provide an historical and causal understanding of the Korean water sector. The deep understanding may become a good base for policy makers to formulate proper policies for the Korean water sector and for related actors to start informed debate. In many cases, Korea’s policy makers have made decisions without a deep historical and causal understanding of the industrial development. As a result, they have often faced considerable challenges from counter-actors, who were backed by critical events and changing contexts. A more severe problem is the lack of (analytical) common ground for discussion among related actors, which is important for

convincing actors of ‘the veracity of policy relevant assertions’ as Jenkins-Smith and Sabatier (1993, pp.50-52) suggest. The historically grounded causal explanation about the development of the Korean water sector may provide a possibility of common ground for mutual learning and understanding.

Secondly, good governance for the Korean water sector as suggested in this research can be a policy option. Agenda 21 (United Nations, 1992) emphasises ‘full public participation’ in water management decision-making. From the perspective of integrated water resources management (Agarwal et al., 2000, pp.15-17, Solanes and Gonzalez-Villarreal, 1999, p.7), water, as an integral part of the ecosystem, has to be managed through a fully democratic decision making process. However, in reality, decision making in the Korean water sector is mostly in the hands of a few elites and merely open to a small number of experts and NGOs. This research tried to develop ways of public participation in national, regional and local levels of decision making processes. The governance also covers industrial, economic and environmental issues. This governance does not imply just consultation processes with stakeholders, but allows them to be part of decision making processes as the Dublin Statement (International Conference on Water and the Environment, 1992) declared. This suggestion has a strong possibility as the cases of Glas Cymru in Wales and the BBC in the UK show.

11.3 Future Research Possibility

Even though this research analysed the economic development of Japan and Taiwan and water reforms in England and Wales, Italy and Argentina as comparators, this is basically a single case study which confines its analytical scope to the Korean water sector. The narrow analytical scope helped provide deep understanding about the evolution of the Korean water sector and verified its theoretical proposition with historically grounded evidence. However, this research strategy restricts its generalisability. Thus, the first imminent research task is to add more cases of water industries in other countries. These comparative studies might reveal commonalities and differences between the water industries from international perspectives and show the appropriateness of theoretical proposition more clearly. In addition, sectoral comparisons between water, gas, electricity and telecommunication in a country are also meaningful.

This research focused on an industrial level of governance. Some dominant organisations in the Korean water sector such as Kwater can be selected to investigate an organisational level of governance. The organisational level of study must contribute to understanding not only the dynamics of organisational decision making, but also the relations between the strategic behaviours of organisations and the dynamics of industrial policy making.

This research explained why and how a certain type of governance was formed depending on institutional processualism, which is grounded in historical events. Nonetheless, actors are likely to be influenced by future expectation in some ways (Simon, 1959, pp.267-272). Institutional processualism, an analytical basis of this research, implicitly considers future expectation as it illustrates that the state tries to induce private investment in a specific industry by adopting sector specific policies and firms tend to invest only if they expect profit from the investment (Barzelay, 1986, pp.5-16). The processual analysis, however, does not clearly take account of the behavioural aspect of actors responding to future events. Therefore, there is a possibility to incorporate future expectation in institutional processualism for a better explanation.

Even though this research adopted a combined methodological strategy by using an econometric analysis, SDT research has been heavily dependant upon qualitative methods. By utilising combined methodological strategies, SDT theorists can make theoretical applications deep and wide. To illustrate, researchers can qualitatively analyse the dynamics of decision making in a certain type of industries across countries and quantitatively estimate the performance differences between the industries according to the variation of the decision making dynamics. In addition, after finding factors or conditions determining good governance by qualitative methods, researchers can investigate their appropriateness in broad context by quantitative methods.

11.4 Final Thought

This research was a long journey historically covering an industrial evolution from the 1960s to the present, for the purpose of verifying the postulation that centralised control by a few elites results in strategic failure. During the journey, it has raised a number of

critical issues, tried to investigate fine details, and synthesised them in order to causally explain the formation of a certain type of governance in the Korean water sector and the associated development of the sector. This research has also shown that centralised control by a few elites, whether they are from the market or the government, resulted in strategic failure in the Korean water sector.

In the water sector, the neo-liberal thought based on ‘the principle of one dollar, one vote’ (Chang, 2007, pp.172-173) is limited and simple economic efficiency encouraged in the market is not sufficient to fulfil the public interest. In addition, the government alone cannot guarantee the democratic development of the water sector. Purposive actors like environmental NGOs were identified as significant interested actors in the governance change of the sector. Purposive actors have struggled to achieve their own purposes against the aims of a few elites. Elite control is too narrow to meet the public interest. Therefore, democratic governance, as this research proposes, can be a way of realising democratic control.

Nonetheless, democratic governance will not be automatically created because governance change is the result of severe interaction between action, events and context. Therefore, the growth of purposive actors is essential and the development of analytical common ground for discussion among purposive and interested actors is also important. Institutional processualism for a historically grounded understanding of the governance changes in the Korean water sector and a stochastic frontier analysis of the efficiency change of the sector, as adopted in this research, might be good common ground for mutual learning. We hope these efforts add a little to our understanding of the reality and truth of industrial development and governance formation, and thereby contribute to the richness of SDT.

Appendix 1 Aide-Mémoire

As a means to answer the main research questions, this research chose unstructured interview. This was mainly because there were only few informants having deep and wide information about three sub-cases in the Korean water sector. They mostly have involved specific cases or events during a limited period. So this research could not ask the same questions to all interviewees. This research developed an aide-mémoire as a guide of interviews, and selectively applied it depending on the information and experience of interviewees. The interviews carried out in this research were similar to conversation, rather than questions and answers.

The supply-oriented case: 1960-1990

A1: The reasons why the supply-oriented governance was formed

A1-1: Main events being related with the supply-oriented governance and their relations.

A1-2: Main policy makers and their ways to dominate the policy making processes.

A1-3: The reasons why the development state chose plan-rational water development policies.

A1-4: The reasons why ministries raised the same voice for supply-oriented policies.

A1-5: The reasons why civic groups did not pay attention to the water governance.

A2: The process that the supply-oriented organisational structure was formed

A2-1: The supply-oriented (industrial) organisational structure and role distribution between actors in the structure.

A2-2: Interaction between actors in the process of forming the supply-oriented organisational structure, in particular, their competition and cooperation in order to gain controlling power over the governance.

A3: The process that the supply-oriented institutional structure was developed

A3-1: The reasons why the state adopted 'national plans' for water resource development.

A3-2: The hierarchical structure of the national plans and the ways to implement the plans.

A3-3: Interaction between actors to create institutions beneficial to their own interests and/or beliefs.

The environment-oriented case: 1990-1997

B1: The reasons why the environment-oriented governance was formed

B1-1: Main events being related with the environment-oriented governance and their relations.

B1-2: Main policy makers and their ways of controlling decision making processes.

B1-3: The reasons why ministries started raising different voices.

B1-4: The reasons why narratives from the government oscillated between ‘economic development’ and ‘environmental protection’ during the environmental crises.

B2: The process that the environment-oriented organisational structure was formed.

B2-1: The environment-oriented (industrial) organisational structure and role distribution between actors in the structure.

B2-2: Interaction between actors in the process of forming the environment-oriented organisational structure.

B2-3: The process that key policy makers including the president and lawmakers involved the organisational change of water-related ministries.

B3: The process that the environment-oriented institutional structure was developed.

B3-1: The process of the state’s adopting ‘national plans’ for water quality improvement and the reasons of continuously replacing the plans.

B3-2: The reasons why the environment-oriented actors suggested ‘integrated water resources management’ and the interaction between environment-oriented actors and supply-oriented actors against the idea of integrated water resources management

B3-3: The ways that the environment-oriented actors influenced and/or involved the establishment of the national plans.

B3-4: The process that the environment-oriented actors changed the rule of the game in the water sector.

The market-oriented case: 1997-2007

C1: The reasons why the market-oriented governance was formed

C1-1: Main events being related with the market-oriented governance and their relations.

C1-2: Extent to which the IMF crisis in 1997 influenced the change of governance.

C1-3: Main policy makers and their ways to dominate decision making. In particular, the ME's strategy to gain decision making power.

C1-4: The reasons why the ME adopted privatisation policies including the privatisation of STPs, BTL for sewer mains and water industry promotion policy.

C1-5: The reasons why the ME faced strong resistance from environmental NGOs and labour unions.

C2: The process that the market-oriented organisational structure was formed.

C2-1: The market-oriented (industrial) organisational structure and role distribution between actors in the structure.

C2-2: Interaction between actors in the process of forming the market-oriented organisational structure. The ways that the ME propelled the privatisation of wastewater industry.

C2-3: The reasons why the privatisation of the wastewater sector was successful whereas the privatisation of the water sector lagged behind.

C2-4: The ways that private firms emerged in the Korean water sector and the extent to which they influenced the organisational structure.

C3: The process that the market-oriented institutional structure was formed.

C3-1: The current institutional structure of the Korean water industry resulting from intense interaction between actors.

C3-2: The ways that the market-oriented network including the ME set up and implemented the market-oriented plans.

C3-3: The ways that the anti-market-oriented network including the MPAS developed counter-plans against the privatisation plans and carried out its counter-action.

Appendix 2 List of Interviewees

Classification	Position	Date & place	Interview focus
The Central Governments/ Experts	- Senior Research Fellow of Korea Environment Institute (KEI)	12:00-14:00 12 April 2007 KEI, Seoul	- Main stream and history of the Korean water industry since the 1980s
	- Advisor of the ME		- Position of the ME and its policy change
	- Senior Research Fellow of Korea Institute of Construction Technology (KICT)	11:30-13:00 10 April 2007 KICT, Ilsan	- Policy change of water resources management from supply-orient governance to environment-oriented governance
	- Advisor of the MLTM		- Interaction between the MLTM, the ME and environmental NGOs
	- The president of Korea Waterworks Management Institute	13:30-15:00 11 April 2007 Seongnam	- Intention, strategies and movement of ministries and private companies
	- Advisor of the ME, the MLTM and the MPAS		- Identification of major events and their relations after the IMF crisis
	- The head of International Policy Research Center, Korea Environment & Resources Corp.	10:00-11:30 19 April 2007 Seongnam	- The role of the PCSD in the development of the governance
	- Ex-general manager of the Presidential Commission on Sustainable Development (PCSD)		- The role of NGOs in the decision making process of the PCSD
			- Interaction between policy participants and major events in the Korean water sector
	- Research Fellow of Korea Water Resources Research Institute (KWRI)	12:30-14:00 30 April 2007 KWRI, Daejeon	- Role of the PCSD for the water sector
	- Ex- advisor of the PCSD		- Politics in decision making in the PCSD
			- Role of NGOs in the decision making process of the PCSD
Local Governments	- Manager of the Wastewater Department in Nonsan city	14:00-15:00 15 May 2007 Nonsan	- History of wastewater services in Nonsan city
			- Current status of BLT in Nonsan
			- Financial Scheme of wastewater facility construction and management

	<ul style="list-style-type: none"> - The head of the Waterworks Department, Nonsan city 	16:00-17:30 15 May 2007 Office of the department, Nonsan	<ul style="list-style-type: none"> - Nonsan's motives of the concession contract with the Kwater - Interaction between actors during the process of the concession contract - Conflicts and Cooperation with the Water after the contract
	<ul style="list-style-type: none"> - Director of Daejeon Utility Corporation - Ex-Head of the Waterworks division, Daejeon Metropolitan City 	14:00-15:30 2 May 2007 Daejeon Utility Corporation, Daejeon	<ul style="list-style-type: none"> - Major events in the Korean water sector since the 1960s - The historical narratives during the industrialization periods - The impact of environmental movement on the evolution of the Korean water sector
	<ul style="list-style-type: none"> - Head of Policy Planning Division Korea Water and Wastewater Works Association (KWWA) - Ex-director of the Waterworks Division, Seoul Metropolitan City 	14:00-15:30 16 May 2007 KWWA, Seoul	<ul style="list-style-type: none"> - History of Seoul Metropolitan waterworks - Current movement of Seoul waterworks division for its reorganisation - Privatisation and corporatisation in the Korean water sector
	<ul style="list-style-type: none"> - Senior Research Fellow of Seoul Development Institute - The president of Korean Society of Environmental Engineers 	14:00-15:30 14 May 2007 Seoul	<ul style="list-style-type: none"> - History of Seoul Metropolitan waterworks - Privatisation history of two STPs - Current movement of Seoul waterworks division for its reorganisation
Labour Union	<ul style="list-style-type: none"> - Vice Director of Chungnam Province Division, Korea Civil Servant Labour Union - Vice Director of the Common Action 	10:00-11:30 15 May 2007 City Hall of Cheongyang	<ul style="list-style-type: none"> - The reason why the labour union is against the privatisation of the water sector - Movement against the reorganisation policy - The reasons why the union did not show any interest in the sewerage privatisation
	<ul style="list-style-type: none"> - Director of Chungnam Province Division, Korea Civil Servant Labour Union (KCSLU) 	12:30-14:00 15 May 2007 City Hall of Nonsan	<ul style="list-style-type: none"> - History of the concession contract between Nonsan and Kwater - Major actors' reaction against the contract, including the union, employees, other cities
	<ul style="list-style-type: none"> - The head of the Waterworks Department Union, Seoul Division of the KCSLU 	10:00-10:40 5 June 2007 Ddukdo WTP, Seoul	<ul style="list-style-type: none"> - Opinion about the corporatisation policy of the Seoul waterworks division - Strategy of the Union against the corporatisation policy of the Seoul city

NGOs	- Director of Nature Conservation Department, Korean Federation for Environmental Conservation (KFEC)	10:00-11:30 20 April 2007 Headquarters of KFEC, Seoul	- Perception of environmental NGOs about sustainability and development - Impact of major environmental events on the Korean water industry - Current movement against the privatisation and water resources management policies
	- Director www.SAFETYWATER.OR.KR	14:00-15:30 26 April 2007 Headquarters of KFEC, Seoul	- Impact of major environmental events on the Korean water industry - Current movement of NGOs toward democratic participation - Opinion about the reorganisation policy of the central government
Companies	- General Manager of Business Strategy Team, Kolon	12:00-13:30 25 April 2007 Headquarters of Kolon, Seoul	- Strategy of Kolon for the market - The reason why Kolon acquired EFMC - Power relation between ministries - The industrial structure and entrance barriers of the market
	- Leader of Strategic Enterprise Team, EFMC	14:00-15:30 11 May 2007 Headquarters of EFMC, Daejeon	- Strategy of EFMC for the market - Privatisation history of EFMC in 1997 - History of selling EFMC to Kolon - The industrial structure and entrance barriers of the market
	- Vice Chief of Infrastructure Business Team, Taeyoung E&C	14:00-15:30 10 May 2007 Headquarters of Taeyoung, Seoul	- Strategy of Taeyoung for the market - History of Taeyoung's participating in the wastewater market - The industrial structure and entrance barriers of the market
	- General Manager of Management & Operation Team, Clean Water Co.	10:00-11:30 16 May 2007 Headquarters of Clean Water Co. Bucheon	- Strategy of Clean Water Co. for the Korean water industry - History of Clean Water Co.'s participating in the wastewater market - The industrial structure and entrance barriers of the market

- Manager of Sewerage Business Team, Kwater	12:00-14:00 23 April 2007 Headquarters of Kwater, Daejeon	- Kwater's strategies for the sewerage market - Market structure of the wastewater sector - Competition and cooperation with other private companies - The reasons of failing in the acquisition of EFMC
- Manger of Waterworks Business Team, the Kwater	12:00-14:00 23 April 2007 Headquarters of Kwater, Daejeon	- Kwater's strategies for the local water supply market - History of concession contracts with the local governments - Market structure of the water supply sector - Interaction with the ministries and private firms
- Manger of Environment & hydropower Plant Maintenance Team, Yongdam Dam office, Kwater	11:00-13:00 22 May 2007 Yongdam Wastewater Plant, Jinan	- History and current situation of integrated management of wastewater facilities of large dam sites - Mechanisms of integrated management of the wastewater plants of Yongdam dam site - Market structure of integrated management of wastewater facilities of large dam sites
- Manager of Operation Department, Chungcheong Regional Headquarters, Kwater	13:00-13:30 29 May 2007 Regional Headquarters, CheongJu	- Current status of integrated water supply system of Chungcheong region - Effect of integrated water supply systems on local water supply business - The case of Nonsan in terms of integrated water supply management
- Senior Manger of Waterworks Planning Department, Kwater	12:00-14:00 5 May 2007 Headquarters of Kwater, Daejeon	- History of 12 regional integrated water supply system - Impact of the 12 regional integrate water supply system on the Korean water industry - Interaction with ministries about physical integration of water and wastewater business areas

-	Manager of Nonsan Water Management Center, Kwater	10:30-13:00 4 May 2007 Center Office, Nonsan	-	History of Nonsan concession contract
			-	Gains and losses from the concession contract
			-	Interaction with the Korean Government Employees' Union, Nonsan city, NGOs about the concession contract and water supply services

Appendix 3 A Sample Interview

- Time: 14:00-15:30, 11 May 2007
- Place: Headquarters of Environment Facilities Management Corp(EFMC), Daejeon, Korea
- Interviewee: The leader of Strategic Enterprise Team, Environment Facilities Management Corp
- Identity of Organisation: The representative private company is specialised in management and operation of environmental plants and facilities. This company was merged with Kolon at a higher price than expected.
- A: interviewer, B: interviewee

Introduction by B

In 1997 when EFMC was separated from Environmental Management Corporation and privatised, the labour union of Environmental Management Corporation strongly resisted, but due to the situation of the IMF period, (the privatisation was) propelled according to the will of the ME. At the beginning of the privatisation, (we) worked really hard. (We had about) 10 persons at the headquarters, (we) could not survive without contracting the operation of wastewater treatment plants with the local governments. Probably, the desperate environment became soil to achieve a little success now. Sometimes I compare (my company) with Water Resource Engineering Corporation (a former subsidiary of Kwater). Even if the company was privatised, it could receive orders from its parent company, Kwater. Nowadays the company has some intention to join the water and wastewater facility operation market, but it is not so easy because the market is already matured.

A: You moved from Environmental Management Corp to EFMC when EFMC was separated from Environmental Management Corporation and privatised. In my opinion, you were in a position to deeply understand the situation at that time. Could you explain the situation?

B: I was not in that kind of position, but I can discuss about the situation. In my opinion, the ME might not independently propel the privatisation policy of the wastewater industry, but use or adopt the infrastructure privatisation policy by the Ministry of Planning and Budget. The Kim Dae-Jung government strongly drove the privatisation policy in the early stage, but lost their power to propel the privatisation policy in the closing period, so many local public corporations were established to replace private

companies managing and operating WTPs. In my opinion, the privatisation policy seemed to be short-sighted. If the government had profound master plans, the privatisation would have greatly progressed. However, the privatisation has been reduced and the local public corporations have been created.

A: What you mean is many local governments established public corporations to manage and operate their WTPs when management contracts with private companies finished.

B: A representative example is the Gwangju Metropolitan City case. Gwangju had entrusted its WTPs to private companies in the period of privatisation, but established a public corporation to take over the WTPs. In addition, Daegu Metropolitan City and Busan Metropolitan City founded public corporations. Afterwards, many small and medium sized local governments have followed this trend. As a result, private companies have shrunk.

A: In other words, management contracts for WTPs have been reduced compared with those in the beginning stage of the privatisation. What do you think about sewer BTL projects?

B: Rather than saying that the BTL projects have been activated, I think that the governments have chosen the lowest bidder for the BTL projects, so they could not give enough money for management and operation services after the construction of sewers. Therefore, it is impossible to provide good services in the stage of management and operation of sewers.

A: What are the reasons that the governments have chosen the lowest bidder for the BTL projects?

B: Rather than the shortage of the governments' budget, the governments place bidding price as the first priority. In addition, severe competition between private companies is another reason. According to selection criteria of a successful bidder, bidding price has much more weight than other criteria such as design. So companies bid with very low prices.

A: Do you think that the low bidding prices will impact on the quality of sewer management?

B: Yes, I think so. BTL projects should cover 20 years. If the quality of sewers deteriorates, social costs might be much higher than the money saved by the lowest bidding price.

A: Do construction companies operate the sewers after construction?

B: Mostly, construction companies entrust sewer operations to operation companies. However, operation prices are too low, so large operation companies like our company do not participate in sewer operations of BTL projects.

A: Usually BTL projects use a sort of fund developed by financial organisation such as banks. How do the funds contribute to the sewer BTL projects?

B: The governments allow profit rate of 4-5 per cent profit. However, financial organisations are reluctant to provide loans with the interest rate suggested by the governments. Thus financial organisations have generally requested construction companies to share profits from construction and/or dividends for investors. So operation markets (of sewer BTL projects) become more difficult.

A: The financing is not in an optimal condition. Is there no way for the construction companies not to use the funds?

B: The funds are essential for the construction companies. If they carry out BTL projects with their own money, they can not do other business.

A: When the privatisation of the wastewater sector was introduced in 1997, was there any resistance from interest groups such as NGOs and labour unions?

B: I am not sure because I have no information about interest groups' reaction. But, the privatisation progressed silently, so there were no severe conflict between interest

groups. Certainly, the labour union of Environmental Management Corporation strongly resisted the privatisation of EFMC which was a division of Environmental Management Corporation. However, the Korean economy was depressed and the social activities shrunk due to the IMF crisis. So the resistance of the labour union could not be successful.

A: May I have your opinions about the privatisation policy of the water supply sector in 2001? Is it quite different from the privatisation of the wastewater sector?

B: Well, we were not involved in the water supply sector in 2001, so I do not have enough information to speak about the privatisation of the water supply sector.

A: Recently, the ME announced the Korean Water Industry Development Policy. How will the policy impact on the Korean water industry?

B: In my point of view, in the water supply sector, Kwater will take charge of a main axis and large metropolitan cities are likely to set up public water corporations. Kwater might take over many small and medium water authorities like now. Private companies could participate in the residual market. Our company attempts to enter the water supply market, but I am not sure how the industry will evolve.

A: What do you think of the impacts of FTA (Free Trade Agreement) between Korea and the EU and standardisation of water and wastewater services on the Korean water industry?

B: Most multi-national water companies are in Europe, so the EU will try to open the Korean water and wastewater market. In addition, the international standardisation of water and wastewater services is nearly completed. So, it is inevitable to open the Korean market. Therefore, we should foster one or two competent private companies. The ME has the same idea which is desirable to promote the industrialization of the Korean water sector and to protect the Korean water industry.

A: The standard of water and wastewater services might provide good criteria to evaluate water companies and authorities. How does the standard influence the Korean water industry?

B: So far, the local governments have arbitrarily set the selection criteria for a successful bidder. If the standard is introduced, the selection criteria will be made appropriate to the international standard. Unless Korean companies have no competence, they could not survive in the market. In fact, international organisations and multi-national companies have strong power to be able to request the change of laws and national standards. Because we are in a position to follow the international standard, we should prepare for the open market. We have no competent companies except Kwater.

A: If the Korean water and wastewater market opens, how will the Korean water companies and organisations compete with the multi-national water companies?

B: In the water supply sector, Kwater has very strong competence. But we need one or two competent private companies to compete with the water multi-national water companies.

A: What do you think about the wastewater sector? Do companies have some competence?

B: The Korean wastewater market is in poor shape. Even though Veolia has participated in the wastewater service market, it could not penetrate the market except in private investment projects like BTO.

A: Do you mean that the profit structure of the wastewater sector is not attractive?

B: Due to inferior profit structure, competent companies could not have been fostered.

A: What are the reasons that the profit structure is so poor?

B: Until now, the local governments perceive environmental investments as costs rather than investments. Therefore, they think the best policy for wastewater facilities is to reduce the costs. As a result, the Korean wastewater industry could only go to a low price and low wage structure. In my opinion, this is a big barrier for the wastewater sector. The present situations of the wastewater sector seem to be that the local governments pay very low prices and receive very poor services. However, social costs by the low quality of wastewater services might be much higher than the money saved from the low price. This is a big problem.

A: Let me have your opinion about contract management. When your company has some conflicts with the local governments, how has your company settled these conflicts according to the contract clauses?

B: That is a very difficult issue. The local governments have dominant power about the contracts. Even if the local governments request something which is not written in the contracts, private companies should follow those requests. This is not a problem of a single company, but general in Korea.

A: When the water and wastewater sectors are privatised and marketised, regulation issues are discussed. The United Kingdom established a sectoral regulator called OFWAT. What do you think about a regulatory system like this?

B: We have had too many regulations until now. If a contract was made between the local government and a company, the local government just has to regulate the quality of the services such as treated water quality. However, they want to intervene in everything and request too many reports.

In my opinion, without changing the overall structure, the introduction of new regulatory systems might be of no use. Despite fair trading laws, the relation between large companies and SMEs has not been changed. Like this, fair rules have not been established between the local governments and private companies.

A: How do you think these problems can be solved?

B: Well, I have no good idea. If the FTA (Free Trade Agreement) finishes and the international standards are applied to the whole nation, these problems will probably be settled. In fact, the local governments which have contracts with multi-national companies tend to settle those kinds of problems. Rather, the national companies have been relatively discriminated against compared with multi-national companies.

A: When the privatisation of the wastewater sector was introduced, was there any argument about the taxation systems?

B: Even though private companies provide the same service as the local governments, the companies should pay corporate income tax and value added tax whereas the local governments do not pay any tax and public corporations have a different taxation system. This taxation system has big problems. The same taxes should be levied on the same service, but taxes are different depending on who provide services. In my opinion, this discrimination might reduce the competence of public sectors.

A: What are the cost differences between local government, public corporations and private companies?

B: There are no official statistics about operation costs of WTPs. Our company provides the operational services at 10 per cent less than the local governments' costs. Our costs are lower after paying 28 per cent of corporate income tax and 10 per cent of value added tax. However, local governments do not recognize this situation. They just think there are no differences between the local governments and the private companies because they pay similar amount of money. When the government has evaluated the performance of WTPs, the government has not considered this factor.

A: When private companies operate WTPs, they reduce 30 per cent of total costs. What are the main costs saved by the companies?

B: Labour costs are the most important part. And electric costs and chemical cost take important portions by improvement of processes.

A: EFMC was an employee's holding company. I would like to ask you about the change of decision making structure after combined with Kolon.

B: Well, I am not sure which one is better, but each one has weaknesses and strengths. Decision making might become more systematic after combination with Kolon.

A: EFMC has focused on operation and management of WTPs. After combining with a mother company, Kolon, has your company changed the basic strategy to expand its business areas?

B: In my opinion, based on our operation and management capability, our company expands our business. Our company might not have interests in pure construction or other new areas, so we might concentrate on operation related businesses.

A: For instance, is EFMC interested in operation and management of water supply facilities and sewers.

B: Yes, we attempt to participate in those markets.

A: The next issue is social equity. How could we reduce the gap of prices and difference of water and wastewater services between rural areas and cities?

B: Well, I do not know exactly. But social issues like the gap of prices and difference of water and wastewater service rate are matters of social values. Thus, I am not in a position to answer this question.

A: In the water supply sector, Water Quality Evaluation Committee could be established by the local ordinance. Through the committee, citizens can have a chance to monitor performance of water suppliers. Does the wastewater sector have those kinds of systems?

B: Citizens have few chances to monitor the performance of service providers in the wastewater sector.

A: Before I finish, I would like to have your opinion about what should be done for the development of the Korean water industry?

B: Each water and wastewater plant and facility has been separately managed and operated. To truly progress the Korean water industry, we should unify them based on watersheds or regions and must facilitate integrated operation and management of water and wastewater plants and facilities. For instance, water and wastewater facilities should be integrated and centrally controlled based on the Nakdong River basin or large regions. This integration might foster the competence of the Korean water industry.

There are many overlapping investment events because of boundaries between municipalities even though they are separated by a small road. This problem has caused huge national loss. Conclusively, we should change these situations to develop the competence of the Korean water industry.

Appendix 4 The Result of A Stochastic Frontier Analysis

Whole Water Suppliers

Output from the program FRONTIER (Version 4.1c)

instruction file = terminal

data file = proin-de.txt

Tech. Eff. Effects Frontier (see B&C 1993)

The model is a production function

The dependent variable is logged

The ols estimates are:

	coefficient	standard-error	t-ratio
beta 0	-0.58093245E+01	0.26829430E+00	-0.21652806E+02
beta 1	0.11704648E+00	0.21769120E-01	0.53767207E+01
beta 2	0.40071479E+00	0.41123213E-01	0.97442480E+01
beta 3	-0.69228490E-01	0.10895865E-01	-0.63536482E+01
beta 4	0.36271260E-01	0.29036450E-02	0.12491631E+02
beta 5	0.14600608E+00	0.20149651E-01	0.72460850E+01
beta 6	0.44938351E+00	0.28105293E-01	0.15989284E+02
sigma-squared	0.21745133E+00		

log likelihood function = -0.59677084E+03

<... snip ...>

the final mle estimates are :

	coefficient	standard-error	t-ratio
beta 0	-0.30194849E+01	0.26674490E+00	-0.11319747E+02
beta 1	0.80606937E-01	0.17058698E-01	0.47252691E+01
beta 2	0.46406284E+00	0.39197254E-01	0.11839167E+02
beta 3	-0.45070667E-01	0.10014077E-01	-0.45007309E+01
beta 4	0.28084153E-01	0.27828358E-02	0.10091919E+02
beta 5	0.10789963E+00	0.18464059E-01	0.58437654E+01
beta 6	0.31871599E+00	0.26943696E-01	0.11828963E+02
delta 0	0.52091873E+00	0.67817953E-01	0.76811332E+01
delta 1	-0.10100865E-05	0.55828892E-07	-0.18092540E+02
delta 2	0.25622902E-02	0.18640826E-03	0.13745583E+02
delta 3	0.78665262E-01	0.69999003E-02	0.11238055E+02
delta 4	0.25031854E-01	0.55441034E-02	0.45150410E+01
sigma-squared	0.15064140E+00	0.79834898E-02	0.18869116E+02
gamma	0.50167954E+00	0.28164340E-01	0.17812579E+02

log likelihood function = -0.40789680E+03

LR test of the one-sided error = 0.37774807E+03

with number of restrictions = 6

[note that this statistic has a mixed chi-square distribution]

number of iterations = 43

(maximum number of iterations set at : 100)

number of cross-sections = 94

number of time periods = 10

total number of observations = 915

thus there are: 25 obsns not in the panel

<... snip ...>

technical efficiency estimates :

firm	year	eff.-est.
1	1	0.41379522E+00
2	1	0.88252655E+00
3	1	0.41492181E+00
4	1	0.67069625E+00
5	1	0.34389431E+00
6	1	0.31980646E+00
7	1	0.73982503E+00
8	1	0.25047904E+00
9	1	0.33823987E+00
10	1	0.30431234E+00

<... snip ...>

85	10	0.30610294E+00
86	10	0.16089672E+00
87	10	0.28408398E+00
88	10	0.25680191E+00
89	10	0.33069768E+00
90	10	0.20378162E+00
91	10	0.30222724E+00
92	10	0.30639968E+00
93	10	0.24651232E+00
94	10	0.74473653E+00

mean efficiency = 0.42169356E+00

Large Suppliers

Tech. Eff. Effects Frontier (see B&C 1993)

The model is a production function

The dependent variable is logged

the final mle estimates are :

	coefficient	standard-error	t-ratio
beta 0	-0.61684755E+01	0.98606089E+00	-0.62556740E+01
beta 1	0.26970082E+00	0.50518439E-01	0.53386610E+01
beta 2	0.40424225E+00	0.85315705E-01	0.47381927E+01
beta 3	-0.29537438E+00	0.61557616E-01	-0.47983401E+01
beta 4	0.12569309E+00	0.15304909E-01	0.82125995E+01
beta 5	0.36054877E+00	0.37254193E-01	0.96780722E+01
beta 6	0.19625279E+00	0.61249667E-01	0.32041446E+01
delta 0	-0.27771370E+00	0.24769009E+00	-0.11212144E+01
delta 1	-0.10903829E-05	0.29625707E-06	-0.36805297E+01
delta 2	0.23806263E-02	0.62417969E-03	0.38140079E+01
delta 3	-0.15154393E+00	0.10287363E+00	-0.14731076E+01
delta 4	0.13517108E+00	0.25719565E-01	0.52555740E+01
sigma-squared	0.15445650E-01	0.59434120E-02	0.25987851E+01
gamma	0.46465965E+00	0.22985510E+00	0.20215329E+01

log likelihood function = 0.63505247E+02

LR test of the one-sided error = 0.33816488E+02

with number of restrictions = 6

[note that this statistic has a mixed chi-square distribution]

number of iterations = 23

(maximum number of iterations set at : 100)

number of cross-sections = 7

number of time periods = 10

total number of observations = 70

thus there are: 0 obsns not in the panel

Upper-mid Suppliers

Tech. Eff. Effects Frontier (see B&C 1993)

The model is a production function

The dependent variable is logged

the final mle estimates are :

	coefficient	standard-error	t-ratio
beta 0	-0.53421261E+00	0.84565405E+00	-0.63171531E+00
beta 1	0.21580544E+00	0.48240098E-01	0.44735698E+01
beta 2	-0.66702909E-01	0.38909083E-01	-0.17143274E+01
beta 3	0.38747335E-01	0.42550147E-01	0.91062752E+00
beta 4	0.54089294E+00	0.33837818E-01	0.15984864E+02
beta 5	-0.76133434E-01	0.21115704E-01	-0.36055362E+01
beta 6	0.62633386E-01	0.62949236E-01	0.99498246E+00
delta 0	0.57285950E+00	0.15626239E+00	0.36660102E+01
delta 1	-0.26533917E-06	0.19385259E-06	-0.13687677E+01
delta 2	-0.21605975E-02	0.86467469E-03	-0.24987403E+01
delta 3	0.10565938E+00	0.45883137E-01	0.23027932E+01
delta 4	0.28707536E-01	0.88995518E-02	0.32257283E+01
sigma-squared	0.17185265E-01	0.33033161E-02	0.52024284E+01
gamma	0.99999999E+00	0.46908511E-02	0.21318093E+03

log likelihood function = 0.53401910E+02

LR test of the one-sided error = 0.42180025E+02

with number of restrictions = 6

[note that this statistic has a mixed chi-square distribution]

number of iterations = 21

(maximum number of iterations set at : 100)

number of cross-sections = 8

number of time periods = 10

total number of observations = 80

thus there are: 0 obsns not in the panel

Lower-mid Suppliers

Tech. Eff. Effects Frontier (see B&C 1993)

The model is a production function

The dependent variable is logged

the final mle estimates are :

	coefficient	standard-error	t-ratio
beta 0	0.75918542E+01	0.59782873E+00	0.12699046E+02
beta 1	0.18471190E-01	0.14691679E-01	0.12572552E+01
beta 2	0.18580169E+00	0.49075800E-01	0.37860145E+01
beta 3	-0.48377169E-01	0.59488538E-02	-0.81321832E+01
beta 4	0.21852408E-02	0.31577505E-02	0.69202453E+00
beta 5	0.71290092E-02	0.20712389E-01	0.34419059E+00
beta 6	0.29560047E-01	0.26138248E-01	0.11309116E+01
delta 0	0.17665628E+01	0.98821284E-01	0.17876339E+02
delta 1	-0.57708111E-05	0.32742498E-06	-0.17624835E+02
delta 2	0.13773074E-03	0.10718716E-02	0.12849556E+00
delta 3	0.13842925E-01	0.79424618E-02	0.17429010E+01
delta 4	0.11561552E-02	0.74513968E-02	0.15515953E+00
sigma-squared	0.44502966E-01	0.48605909E-02	0.91558757E+01
gamma	0.33443212E+00	0.72496879E-01	0.46130554E+01

log likelihood function = 0.65605930E+02

LR test of the one-sided error = 0.52937597E+03

with number of restrictions = 6

[note that this statistic has a mixed chi-square distribution]

number of iterations = 31

(maximum number of iterations set at : 100)

number of cross-sections = 45

number of time periods = 10

total number of observations = 443

thus there are: 7 obsns not in the panel

Small Suppliers

Tech. Eff. Effects Frontier (see B&C 1993)

The model is a production function

The dependent variable is logged

the final mle estimates are :

	coefficient	standard-error	t-ratio
beta 0	0.51268219E+01	0.64888921E+00	0.79009203E+01
beta 1	0.51611366E-01	0.23769005E-01	0.21713726E+01
beta 2	0.12258462E+00	0.35496750E-01	0.34534040E+01
beta 3	0.38033158E-01	0.10266219E-01	0.37046899E+01
beta 4	-0.96669996E-04	0.12655588E-02	-0.76385224E-01
beta 5	-0.88128446E-02	0.10605673E-01	-0.83095570E+00
beta 6	0.74339770E-01	0.17645748E-01	0.42128999E+01
delta 0	0.13454352E+01	0.90909097E-01	0.14799786E+02
delta 1	-0.18477376E-04	0.70902680E-06	-0.26060195E+02
delta 2	0.37075302E-02	0.10852693E-02	0.34162305E+01
delta 3	0.96513589E-02	0.41256679E-02	0.23393446E+01
delta 4	-0.29629207E-02	0.55519799E-02	-0.53366921E+00
sigma-squared	0.20279511E-01	0.18003436E-02	0.11264245E+02
gamma	0.43304836E+00	0.11564926E+00	0.37444973E+01

log likelihood function = 0.18119125E+03

LR test of the one-sided error = 0.47171604E+03

with number of restrictions = 6

[note that this statistic has a mixed chi-square distribution]

number of iterations = 38

(maximum number of iterations set at : 100)

number of cross-sections = 33

number of time periods = 10

total number of observations = 312

thus there are: 18 obsns not in the panel

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